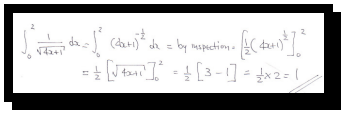
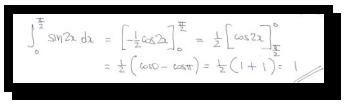
DEFINITE INTEGRATION MIX

Part 1

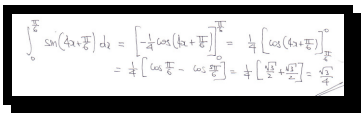
1. $$\int_0^2 \frac{1}{\sqrt{4x+1}}\ dx = 1$$



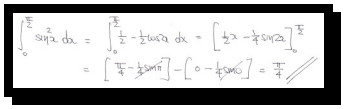
2. $$\int_0^{\frac{\pi}{2}} \sin 2x\ \ dx = 1$$



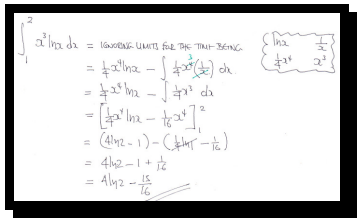
3. $$\int_0^{\frac{\pi}{6}} \sin\left(4x+\frac{\pi}{6}\right)\ dx = \frac{\sqrt{3}}{4}$$



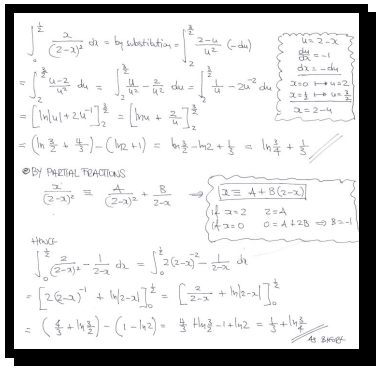
4. $$\int_0^{\frac{\pi}{2}} \sin^2 x\ \ dx = \frac{\pi}{4}$$



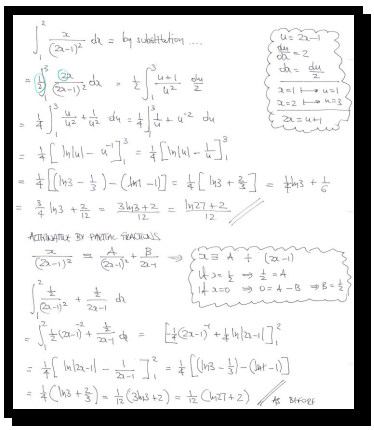
5. $\displaystyle\int_1^2 x^3 \ln x \ dx = 4\ln 2 - \frac{15}{16}$



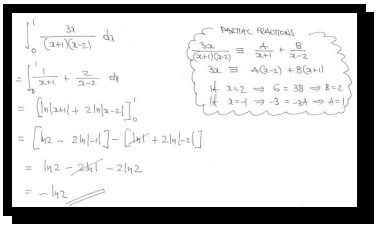
6. $\displaystyle\int_0^{\frac{1}{2}} \frac{x}{(2-x)^2} \ dx = \frac{1}{3} + \ln\frac{3}{4}$



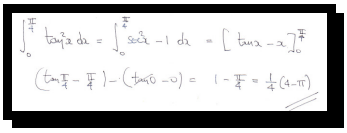
7. $\displaystyle\int_1^2 \frac{x}{(2x-1)^2} \ dx = \frac{2+\ln 27}{12}$



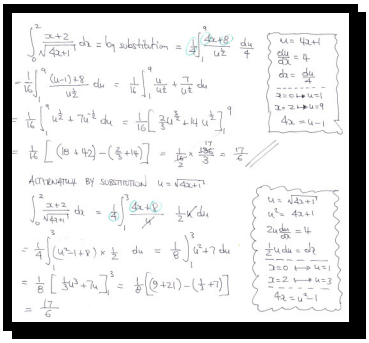
8. $\displaystyle\int_0^1 \frac{3x}{(x+1)(x-2)}\,dx = -\ln 2$



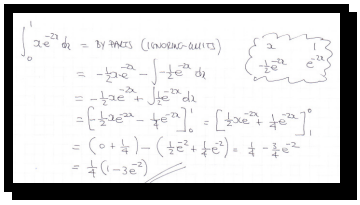
9. $\displaystyle\int_0^{\frac{\pi}{4}} \tan^2 x\,dx = \frac{1}{4}(4-\pi)$



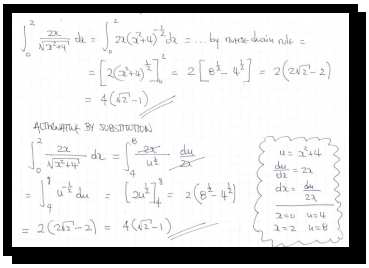
10. $\displaystyle\int_0^2 \frac{x+2}{\sqrt{4x+1}}\,dx = \frac{17}{6}$



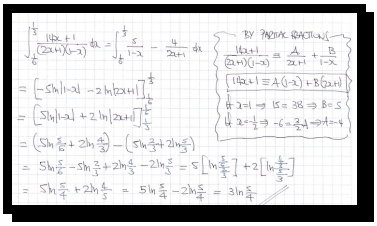
11. $\displaystyle\int_0^1 x\mathrm{e}^{-2x}\ dx=\frac{1}{4}\left(1-3\mathrm{e}^{-2}\right)$



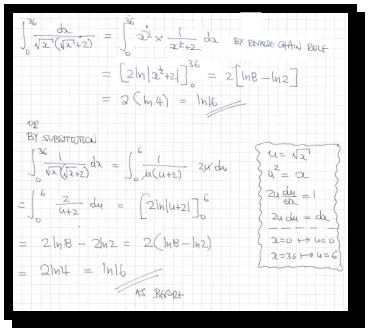
12. $\displaystyle\int_0^2 \frac{2x}{\sqrt{x^2+4}}\ dx=4\left(\sqrt{2}-1\right)$



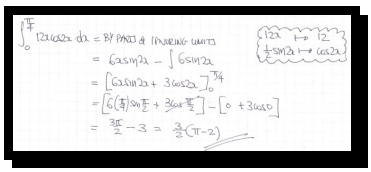
13. $\displaystyle\int_{\frac{1}{6}}^{\frac{1}{3}} \frac{14x+1}{(2x+1)(1-x)}\ dx=3\ln\left(\frac{5}{4}\right)$



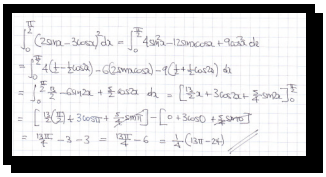
14. $\displaystyle\int_0^{36} \frac{1}{\sqrt{x}\left(\sqrt{x}+2\right)}\,dx = \ln 16$



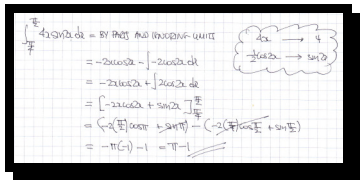
15. $\displaystyle\int_0^{\frac{\pi}{4}} 12x\cos 2x\;\;dx = \frac{3}{2}(\pi-2)$



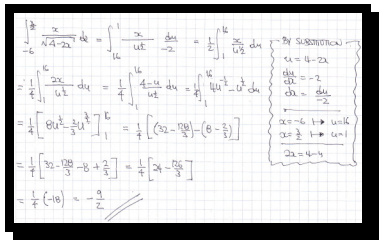
16. $\displaystyle\int_0^{\frac{\pi}{2}} (2\sin x - 3\cos x)^2\;\;dx = \frac{1}{4}(13\pi-24)$



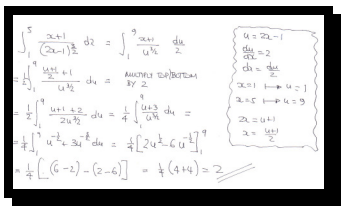
17. $\displaystyle\int_{\frac{\pi}{4}}^{\frac{\pi}{2}} 4x\sin 2x \ dx = \pi - 1$



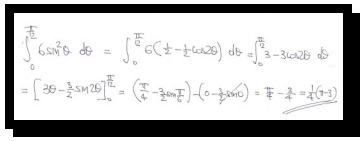
18. $\displaystyle\int_{-6}^{\frac{3}{2}} \frac{x}{\sqrt{4-2x}} \ dx = -\frac{9}{2}$



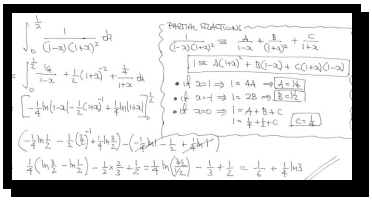
19. $\displaystyle\int_{1}^{5} \frac{x+1}{(2x-1)^{\frac{3}{2}}} \ dx = 2$



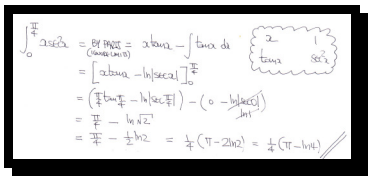
20. $\displaystyle\int_{0}^{\frac{1}{12}\pi} 6\sin^2\theta \ d\theta = \frac{1}{4}(\pi - 3)$



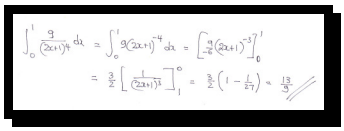
21. $$\int_0^{\frac{1}{2}} \frac{1}{(1-x)(1+x)^2}\,dx = \frac{1}{6}+\frac{1}{4}\ln 3$$



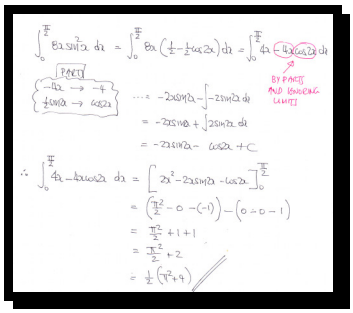
22. $$\int_0^{\frac{1}{4}\pi} x\sec^2 x\ \ dx = \frac{1}{4}(\pi - \ln 4)$$

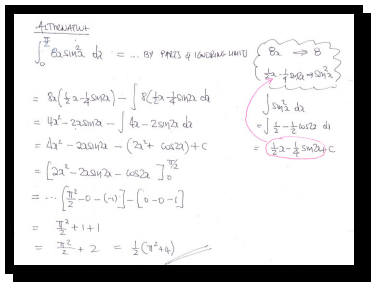


23. $$\int_0^1 \frac{9}{(2x+1)^4}\ \ dx = \frac{13}{9}$$

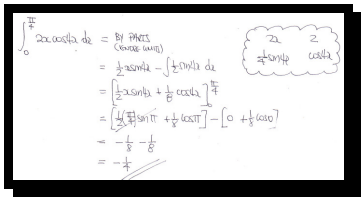


24. $\displaystyle\int_0^{\frac{1}{2}\pi} 8x\sin^2 x \ dx = \frac{1}{2}\left(\pi^2+4\right)$

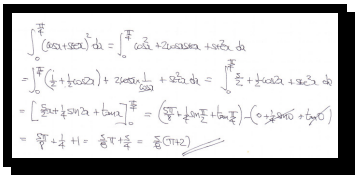




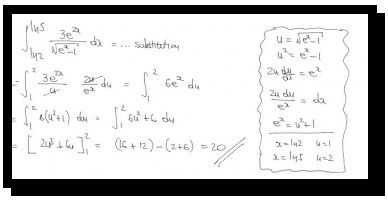
25. $\displaystyle\int_0^{\frac{1}{4}\pi} 2x\cos 4x \ dx = -\frac{1}{4}$



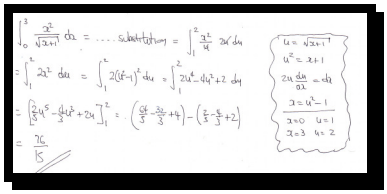
26. $\displaystyle\int_0^{\frac{1}{4}\pi} \left(\cos x+\sec x\right)^2 dx = \frac{5}{8}\left(\pi+2\right)$



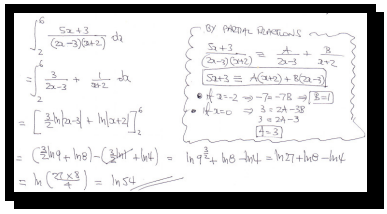
27. $$\int_{\ln 2}^{\ln 5} \frac{3e^{2x}}{\sqrt{e^x-1}}\,dx = 20$$



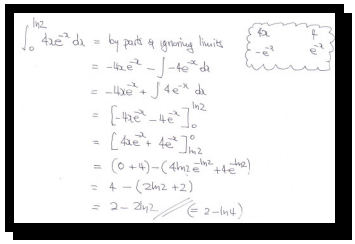
28. $$\int_0^3 \frac{x^2}{\sqrt{x+1}}\,dx = \frac{76}{15}$$



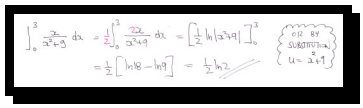
29. $$\int_2^6 \frac{5x+3}{(2x-3)(x+2)}\,dx = \ln 54$$



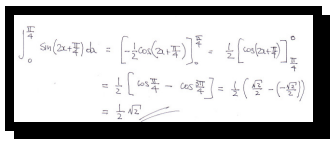
30. $\displaystyle\int_0^{\ln 2} 4xe^{-x}\ dx = 2-\ln 4$



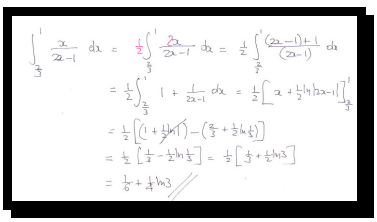
31. $\displaystyle\int_0^3 \frac{x}{x^2+9}\ dx = \frac{1}{2}\ln 2$

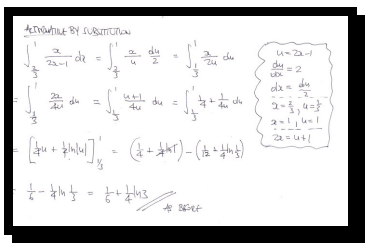


32. $\displaystyle\int_0^{\frac{1}{4}\pi} \sin\left(2x+\frac{\pi}{4}\right)\ dx = \frac{\sqrt{2}}{2}$

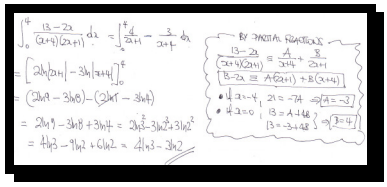


33. $\displaystyle\int_{\frac{2}{3}}^{1} \frac{x}{2x-1}\ dx = \frac{1}{6}+\frac{1}{4}\ln 3$

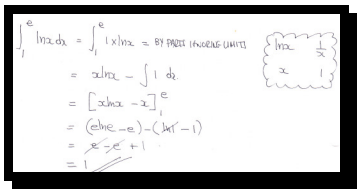




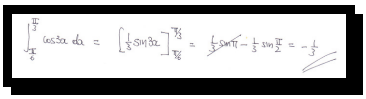
34. $$\int_0^4 \frac{13-2x}{(x+4)(2x+1)}\,dx = 4\ln 3 - 3\ln 2$$



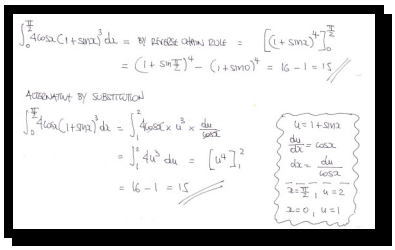
35. $$\int_1^{\mathrm{e}} \ln x\ dx = 1$$



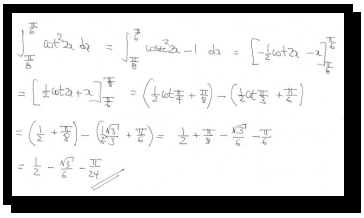
36. $$\int_{\frac{1}{6}\pi}^{\frac{1}{3}\pi} \cos 3x\ dx = -\frac{1}{3}$$



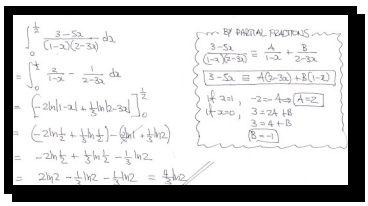
37. $$\int_0^{\frac{1}{2}\pi} 4\cos x\,(1+\sin x)^3\,dx = 15$$



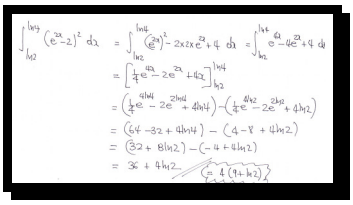
38. $\displaystyle\int_{\frac{1}{8}}^{\frac{1}{6}\pi} \cot^2 2x \ dx = \frac{1}{2}-\frac{1}{6}\sqrt{3}-\frac{1}{24}\pi$



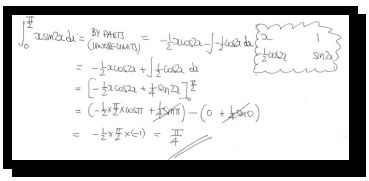
39. $\displaystyle\int_{0}^{\frac{1}{2}} \frac{3-5x}{(1-x)(2-3x)} \ dx = \frac{4}{3}\ln 2$



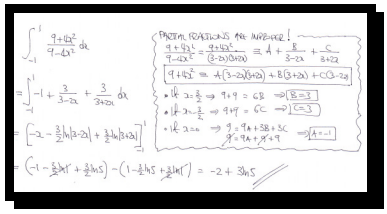
40. $\displaystyle\int_{\ln 2}^{\ln 4} \left(\mathrm{e}^{2x}-2\right)^2 \ dx = 4\left(9+\ln 2\right)$



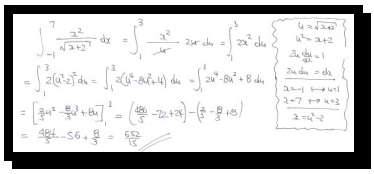
41. $\displaystyle\int_{0}^{\frac{1}{2}\pi} x\sin 2x \ dx = \frac{1}{4}\pi$



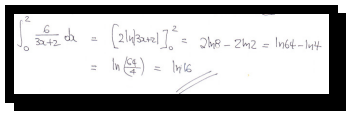
42. $$\int_{-1}^{1} \frac{9+4x^2}{9-4x^2}\,dx = -2+3\ln 5$$



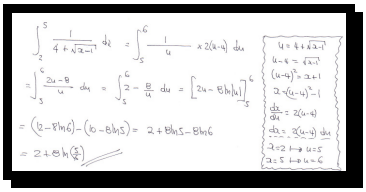
43. $$\int_{-1}^{7} \frac{x^2}{\sqrt{x+2}}\,dx = \frac{652}{15}$$



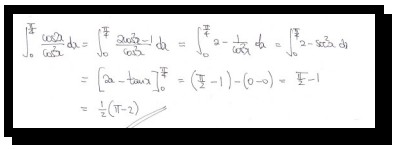
44. $$\int_{0}^{2} \frac{6}{3x+2}\,dx = \ln 16$$



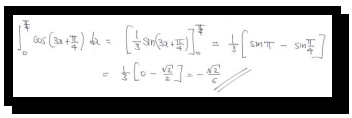
45. $$\int_{2}^{5} \frac{1}{4+\sqrt{x-1}}\,dx = 2+8\ln\left(\frac{5}{6}\right)$$



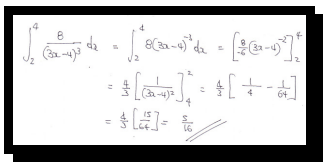
46. $$\int_0^{\frac{1}{4}\pi} \frac{\cos 2x}{\cos^2 x}\,dx = \frac{1}{2}(\pi - 2)$$



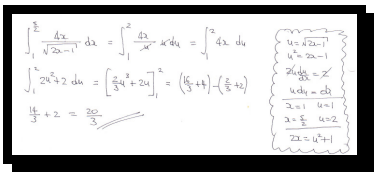
47. $$\int_0^{\frac{\pi}{4}} \cos\left(3x + \frac{\pi}{4}\right)\,dx = -\frac{\sqrt{2}}{6}$$



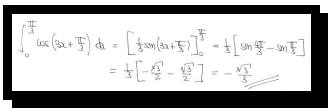
48. $$\int_2^4 \frac{8}{(3x-4)^3}\,dx = \frac{5}{16}$$



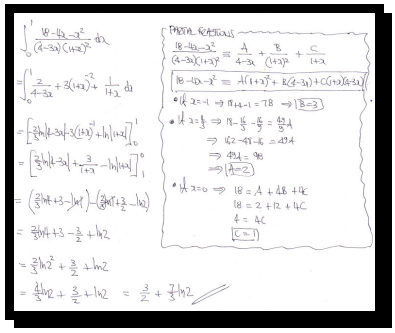
49. $$\int_1^{\frac{5}{2}} \frac{4x}{\sqrt{2x-1}}\,dx = \frac{20}{3}$$



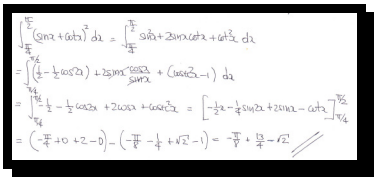
50. $$\int_0^{\frac{\pi}{3}} \cos\left(3x+\frac{\pi}{3}\right)\,dx=-\frac{\sqrt{3}}{3}$$



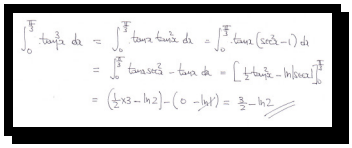
51. $$\int_0^1 \frac{18-4x-x^2}{(4-3x)(1+x)^2}\,dx=\frac{7}{3}\ln 2+\frac{3}{2}$$



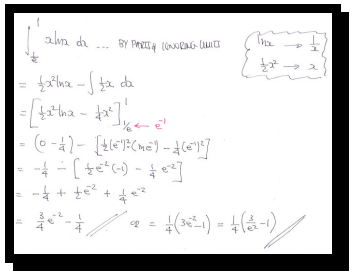
52. $$\int_{\frac{\pi}{4}}^{\frac{\pi}{2}} \left(\sin x+\cot x\right)^2\,dx=\frac{1}{8}\left(26-\pi-4\sqrt{2}\right)$$



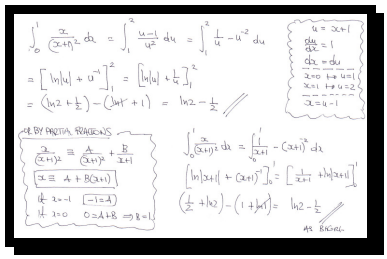
53. $$\int_0^{\frac{\pi}{3}} \tan^3 x\,\,dx=\frac{3}{2}-\ln 2$$



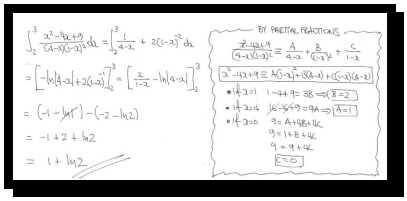
54. $\displaystyle\int_{\frac{1}{\mathrm{e}}}^{1} x\ln x\ dx=\frac{1}{4}\left(\frac{3}{\mathrm{e}^2}-1\right)$



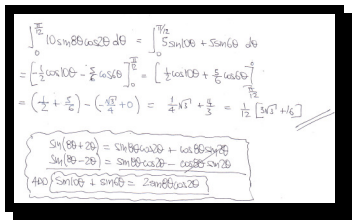
55. $\displaystyle\int_{0}^{1}\frac{x}{(1+x)^2}\ dx=\ln 2-\frac{1}{2}$



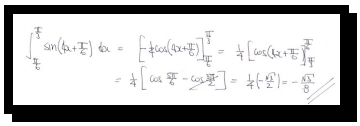
56. $\displaystyle\int_{2}^{3}\frac{x^2-4x+9}{(4-x)(1-x)^2}\ dx=1+\ln 2$



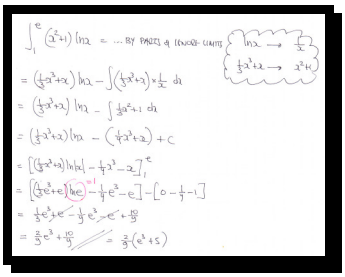
57. $\displaystyle\int_0^{\frac{\pi}{12}} 10\sin 8\theta\cos 2\theta\, d\theta = \frac{1}{12}\left(16+3\sqrt{3}\right)$



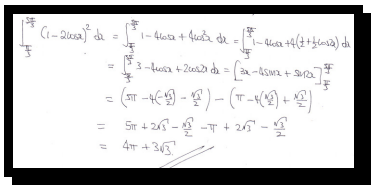
58. $\displaystyle\int_{\frac{\pi}{6}}^{\frac{\pi}{3}} \sin\left(4x+\frac{\pi}{6}\right)\, dx = -\frac{\sqrt{3}}{8}$



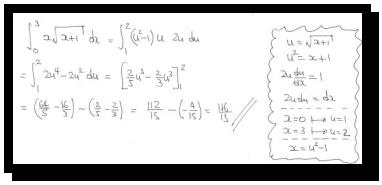
59. $\displaystyle\int_1^{\mathrm{e}} \left(x^2+1\right)\ln x\ \ dx = \frac{2}{9}\left(\mathrm{e}^3+5\right)$



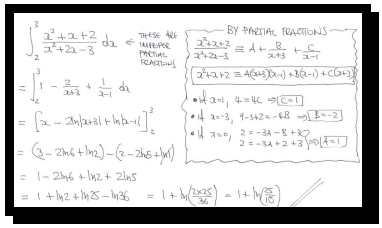
60. $\displaystyle\int_{\frac{\pi}{3}}^{\frac{5\pi}{3}} (1-2\cos x)^2 \, dx = 4\pi + 3\sqrt{3}$



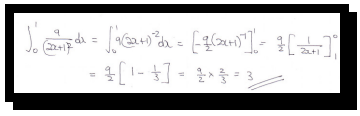
61. $\displaystyle\int_0^3 x\sqrt{x+1} \, dx = \frac{116}{15}$



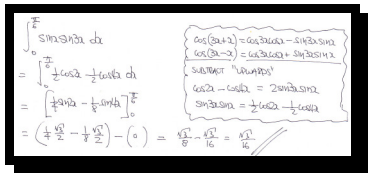
62. $\displaystyle\int_2^3 \frac{x^2+x+2}{x^2+2x-3} \, dx = 1+\ln\left(\frac{25}{18}\right)$



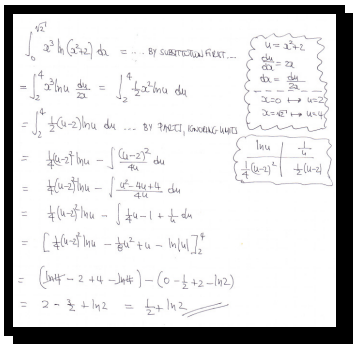
63. $\displaystyle\int_0^1 \frac{9}{(2x+1)^2} \, dx = 3$



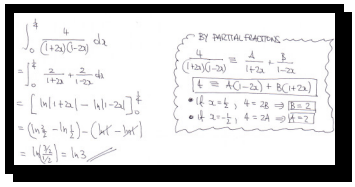
64. $\displaystyle\int_0^{\frac{\pi}{6}} \sin x \sin 3x \ dx = \frac{\sqrt{3}}{16}$



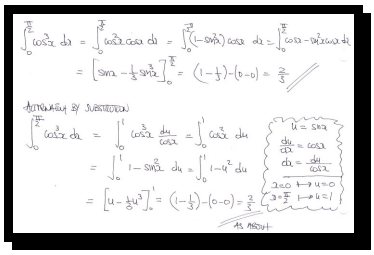
65. $\displaystyle\int_0^{\sqrt{2}} x^3 \ln\left(x^2+2\right) \ dx = \frac{1}{2} + \ln 2$



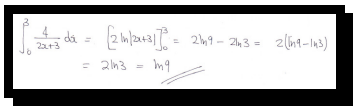
66. $\displaystyle\int_0^{\frac{1}{4}} \frac{4}{(1+2x)(1-2x)} \ dx = \ln 3$



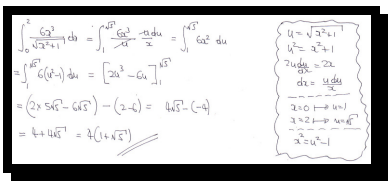
67. $\displaystyle\int_0^{\frac{\pi}{2}} \cos^3 x \ dx = \frac{2}{3}$



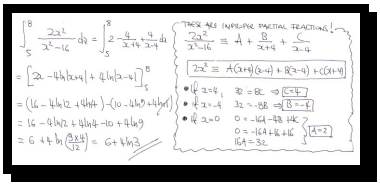
68. $\displaystyle\int_0^3 \frac{4}{2x+3} \ dx = \ln 9$



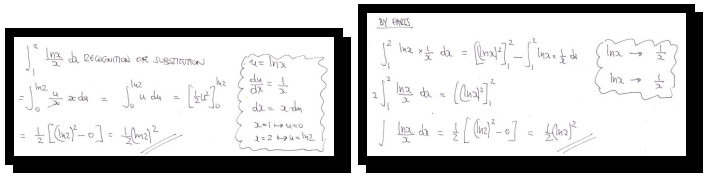
69. $\displaystyle\int_0^2 \frac{6x^3}{\sqrt{x^2+1}} \ dx = 4\left(1+\sqrt{5}\right)$



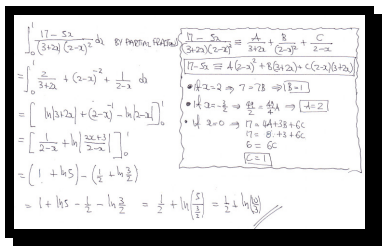
70. $\displaystyle\int_5^8 \frac{2x^2}{x^2-16} \ dx = 6+4\ln 3$



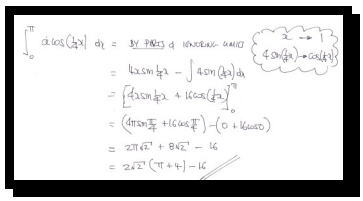
71. $$\int_1^2 \frac{\ln x}{x}\,dx=\frac{1}{2}(\ln 2)^2$$



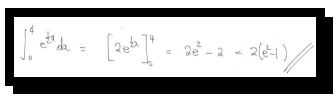
72. $$\int_0^1 \frac{17-5x}{(3+2x)(2-x)^2}\,dx=\frac{1}{2}+\ln\left(\frac{10}{3}\right)$$



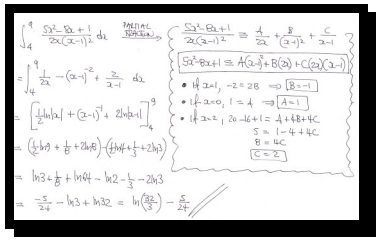
73. $$\int_0^{\pi} x\cos\left(\frac{1}{4}x\right)\,dx=2\sqrt{2}\,(\pi+4)-16$$



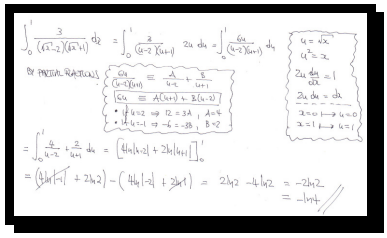
74. $$\int_0^4 \mathrm{e}^{\frac{1}{2}x}\,dx=2\left(\mathrm{e}^2-1\right)$$



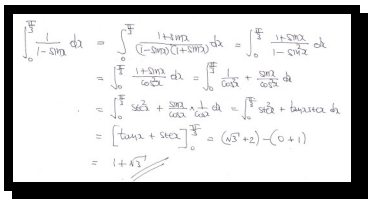
75. $$\int_4^9 \frac{5x^2-8x+1}{2x(x-1)^2}\,dx=\ln\left(\frac{32}{3}\right)-\frac{5}{24}$$



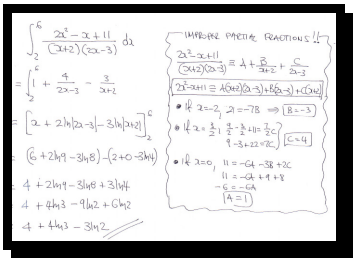
76. $$\int_0^1 \frac{3}{\left(\sqrt{x}-2\right)\left(\sqrt{x}+1\right)}\,dx=-\ln 4$$



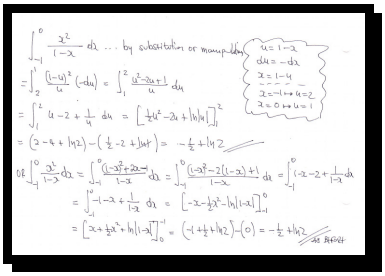
77. $$\int_0^{\frac{\pi}{3}} \frac{1}{1-\sin x}\,dx=1+\sqrt{3}$$



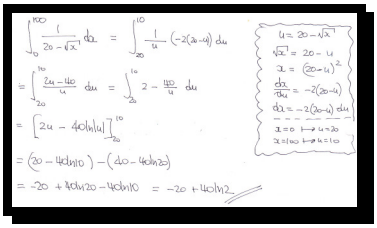
78. $$\int_2^6 \frac{2x^2-x+11}{(x+2)(2x-3)}\,dx = 4+4\ln 3-3\ln 2$$



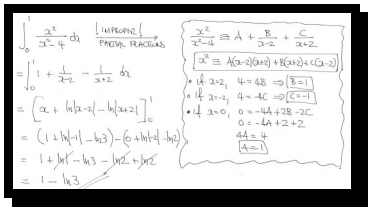
79. $$\int_{-1}^0 \frac{x^2}{1-x}\,dx = -\frac{1}{2}+\ln 2$$



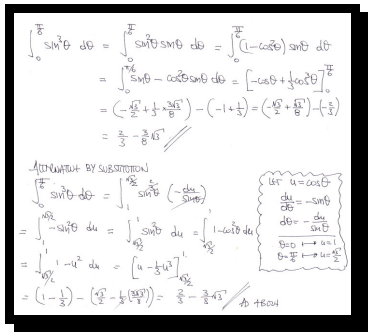
80. $$\int_0^{100} \frac{1}{20-\sqrt{x}}\,dx = 40\ln 2-20$$



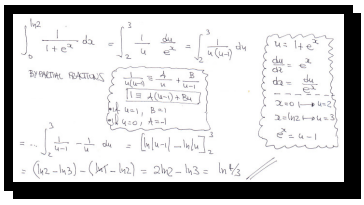
81. $$\int_0^1 \frac{x^2}{x^2-4}\,dx = 1-\ln 3$$



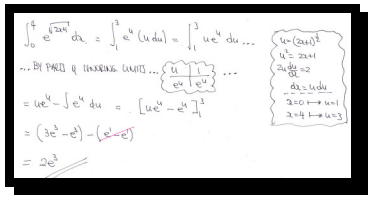
82. $$\int_0^{\frac{\pi}{6}} \sin^3\theta\,\,d\theta = \frac{2}{3}-\frac{3}{8}\sqrt{3} = \frac{1}{24}\left(16-9\sqrt{3}\right)$$



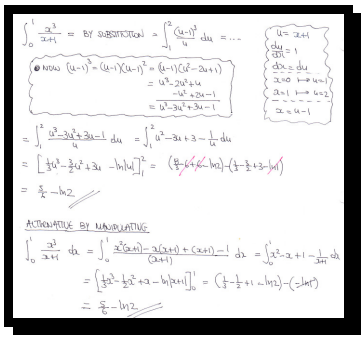
83. $$\int_0^{\ln 2} \frac{1}{1+\mathrm{e}^x}\,dx = \ln\left(\frac{4}{3}\right)$$



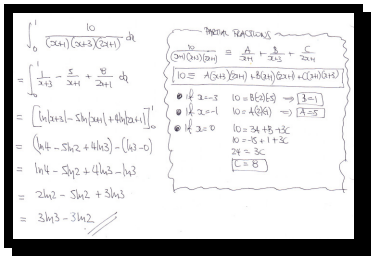
84. $\displaystyle\int_0^4 \mathrm{e}^{\sqrt{2x+1}}\,dx = 2\mathrm{e}^3$



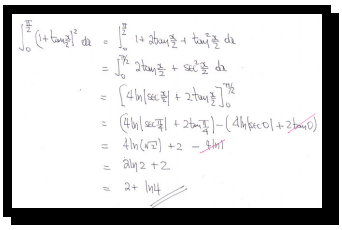
85. $\displaystyle\int_0^1 \frac{x^3}{x+1}\,dx = \frac{5}{6} - \ln 2$



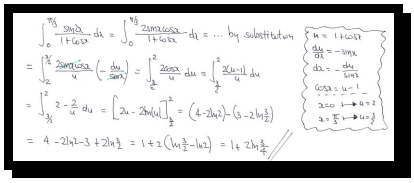
86. $\displaystyle\int_0^1 \frac{10}{(x+1)(x+3)(2x+1)}\,dx = 3\ln 3 - 3\ln 2$



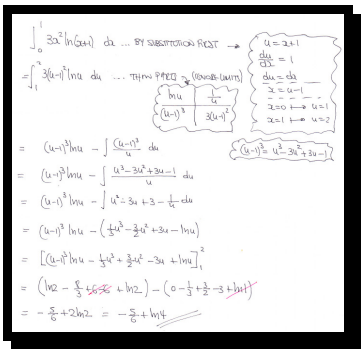
87. $\displaystyle\int_0^{\frac{\pi}{2}} \left[1+\tan\left(\frac{1}{2}x\right)\right]^2 \, dx = 2+\ln 4$



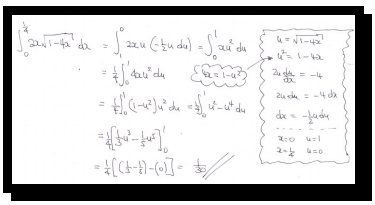
88. $\displaystyle\int_0^{\frac{\pi}{3}} \frac{\sin 2x}{1+\cos x} \, dx = 1+2\ln\left(\frac{3}{4}\right)$



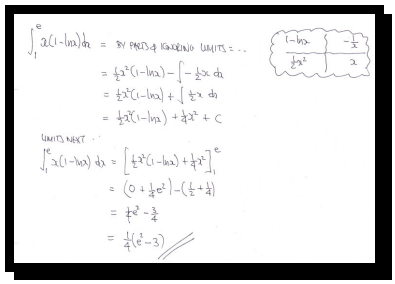
89. $\displaystyle\int_0^1 3x^2 \ln(x+1) \, dx = -\frac{5}{6}+\ln 4$



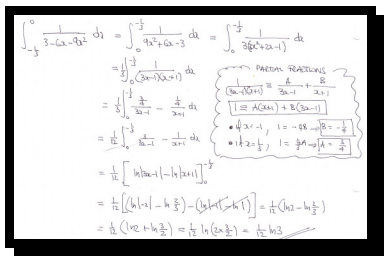
90. $$\int_0^{\frac{1}{4}} 2x\sqrt{1-4x}\ dx = \frac{1}{30}$$



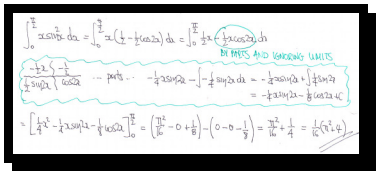
91. $$\int_1^{\mathrm{e}} x(1-\ln x)\ dx = \frac{1}{4}\left(\mathrm{e}^2-3\right)$$



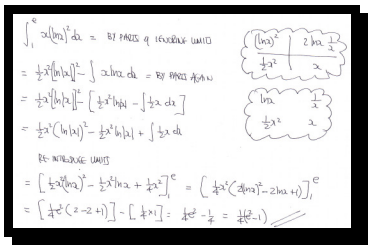
92. $$\int_{-\frac{1}{3}}^{0} \frac{1}{3-6x-9x^2}\ dx = \frac{1}{12}\ln 3$$



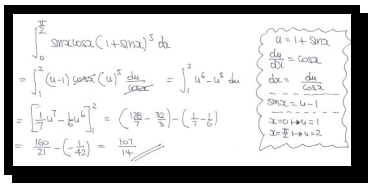
93. $$\int_0^{\frac{\pi}{2}} x\sin^2 x \ dx=\frac{1}{16}\left(\pi^2+4\right)$$



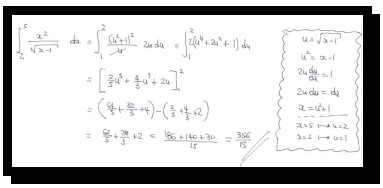
94. $$\int_1^{\mathrm{e}} x\left(\ln x\right)^2 \ dx=\frac{1}{4}\left(\mathrm{e}^2-1\right)$$



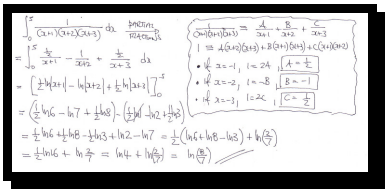
95. $$\int_0^{\frac{\pi}{2}} \sin x\cos x\left(1+\sin x\right)^5 \ dx=\frac{107}{14}$$



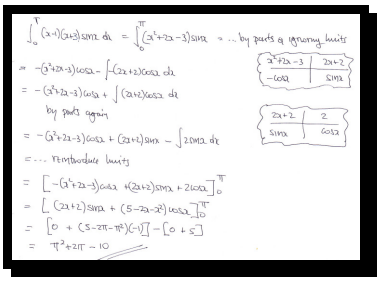
96. $$\int_2^5 \frac{x^2}{\sqrt{x-1}} \ dx=\frac{356}{15}$$



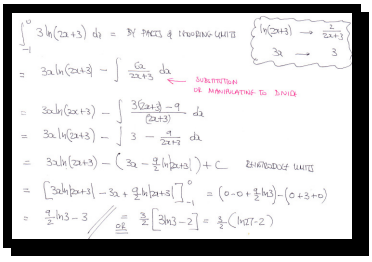
97. $$\int_0^5 \frac{1}{(x+1)(x+2)(x+3)}\,dx = \ln\left(\frac{8}{7}\right)$$

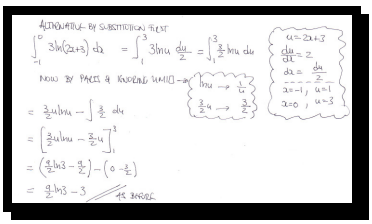


98. $$\int_0^{\pi} (x-1)(x+3)\sin x\,\,dx = \pi^2 + 2\pi - 10$$

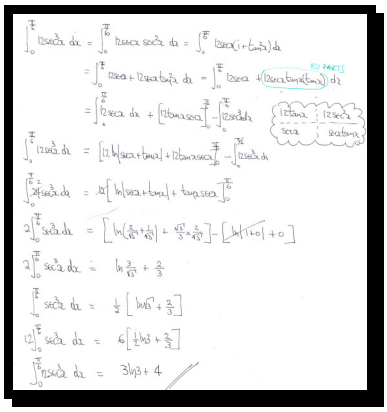


99. $$\int_{-1}^{0} 3\ln(2x+3)\,\,dx = \frac{3}{2}(\ln 27 - 2)$$

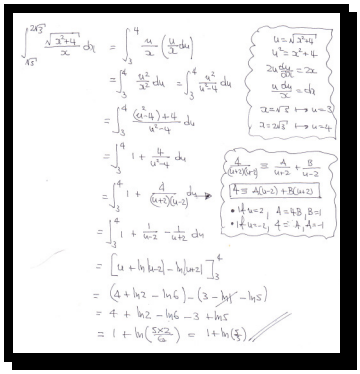




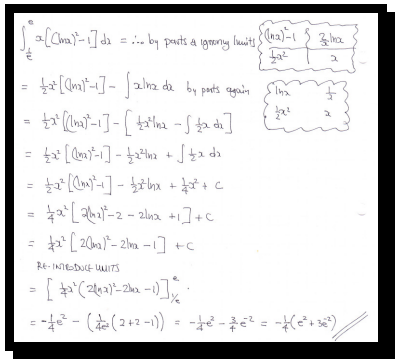
100. $\displaystyle\int_0^{\frac{\pi}{6}} 12\sec^3 x \ dx = 4+3\ln 3$



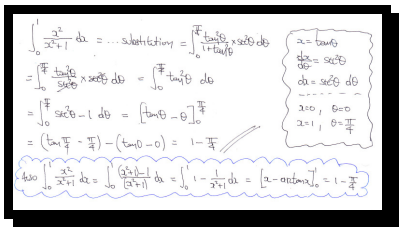
101. $\displaystyle\int_{\sqrt{5}}^{2\sqrt{3}} \frac{\sqrt{x^2+4}}{x} \ dx = 1+\ln\left(\frac{5}{3}\right)$



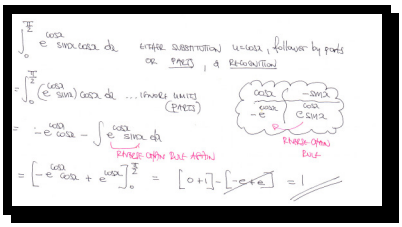
102. $$\int_{\mathrm{e}^{-1}}^{\mathrm{e}} x\left[(\ln x)^2-1\right]\,dx=-\frac{1}{4}\left(\mathrm{e}^2+3\mathrm{e}^{-2}\right)$$



103. $$\int_0^1 \frac{x^2}{x^2+1}\,dx=1-\frac{\pi}{4}$$

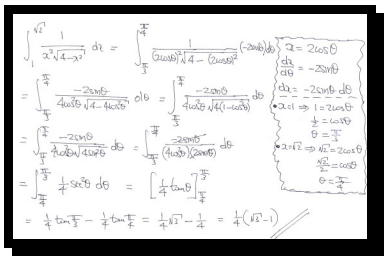


104. $$\int_0^{\frac{\pi}{2}} \mathrm{e}^{\cos x}\sin x\cos x\;\;dx=1$$

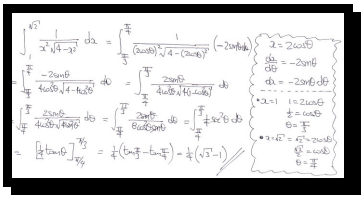


Part 2

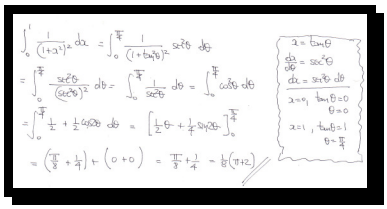
1. $\displaystyle\int_0^{\sqrt{2}} \frac{x^2}{\sqrt{4-x^2}}\,dx = \frac{\pi}{2}-1$, use $x = 2\sin\theta$



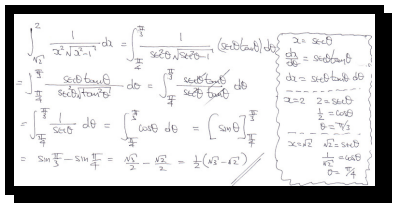
2. $\displaystyle\int_1^{\sqrt{2}} \frac{1}{x^2\sqrt{4-x^2}}\,dx = \frac{1}{4}\left(\sqrt{3}-1\right)$, use $x = 2\cos\theta$



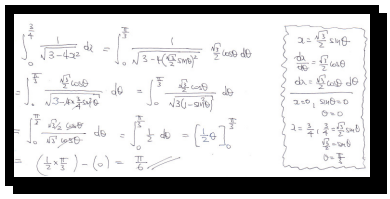
3. $\displaystyle\int_0^{1} \frac{1}{\left(1+x^2\right)^2}\,dx = \frac{1}{8}(\pi+2)$, use $x = \tan\theta$



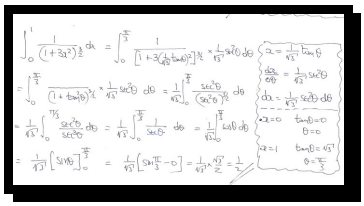
4. $\displaystyle\int_{\sqrt{2}}^{2} \frac{1}{x^2\sqrt{x^2-1}}\,dx=\frac{1}{2}\left(\sqrt{3}-\sqrt{2}\right)$, use $x=\sec\theta$



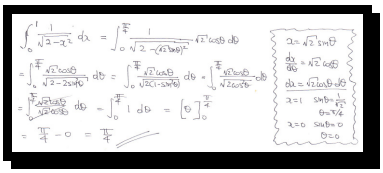
5. $\displaystyle\int_{0}^{\frac{3}{4}} \frac{1}{\sqrt{3-4x^2}}\,dx=\frac{\pi}{6}$, use $x=\frac{\sqrt{3}}{2}\sin\theta$



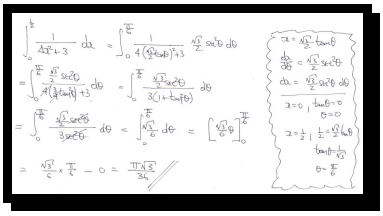
6. $\displaystyle\int_{0}^{1} \frac{1}{\left(1+3x^2\right)^{\frac{3}{2}}}\,dx=\frac{1}{2}$, use $x=\frac{1}{\sqrt{3}}\tan\theta$



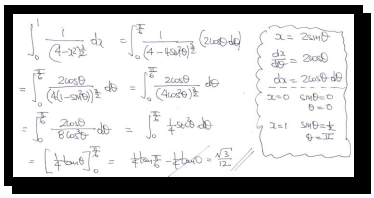
7. $\displaystyle\int_0^1 \frac{1}{\sqrt{2-x^2}}\,dx = \frac{\pi}{4}$, use $x = \sqrt{2}\sin\theta$



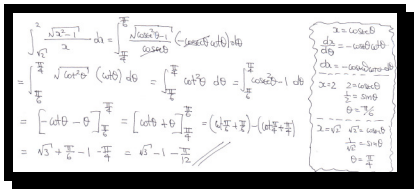
8. $\displaystyle\int_0^{\frac{1}{2}} \frac{1}{4x^2+3}\,dx = \frac{\pi\sqrt{3}}{36}$, use $x = \frac{\sqrt{3}}{2}\tan\theta$



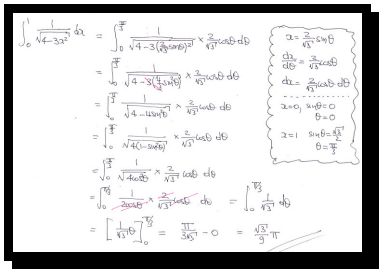
9. $\displaystyle\int_0^1 \frac{1}{\left(4-x^2\right)^{\frac{3}{2}}}\,dx = \frac{\sqrt{3}}{12}$, use $x = 2\sin\theta$



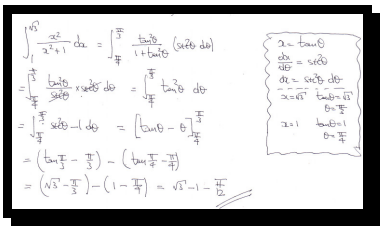
10. $\displaystyle\int_{\sqrt{2}}^{2}\frac{\sqrt{x^2-1}}{x}\,dx=\sqrt{3}-1-\frac{\pi}{12}$, use $x=\operatorname{cosec}\theta$



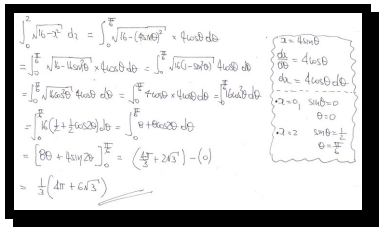
11. $\displaystyle\int_{0}^{1}\frac{1}{\sqrt{4-3x^2}}\,dx=\frac{\pi\sqrt{3}}{9}$, use $x=\frac{2}{\sqrt{3}}\sin\theta$



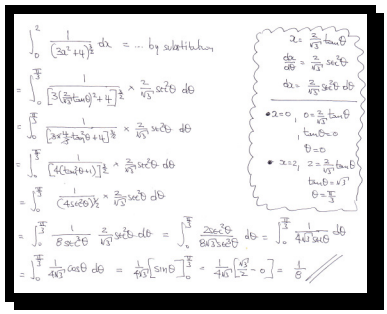
12. $\displaystyle\int_{1}^{\sqrt{3}}\frac{x^2}{x^2+1}\,dx=\sqrt{3}-1-\frac{\pi}{12}$, use $x=\tan\theta$



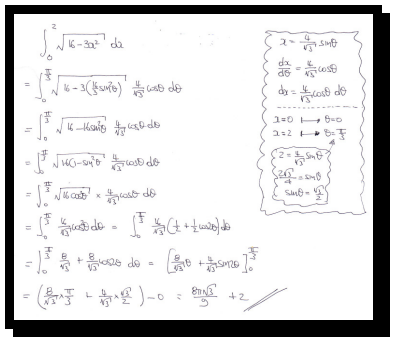
13. $\displaystyle\int_0^2 \sqrt{16-x^2}\ dx = \frac{1}{3}\left(4\pi+6\sqrt{3}\right)$, use $x = 4\sin\theta$



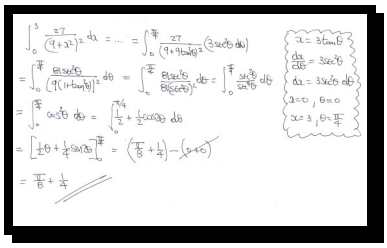
14. $\displaystyle\int_0^2 \frac{1}{\left(3x^2+4\right)^{\frac{3}{2}}}\ dx = \frac{1}{8}$, use $x = \frac{2}{\sqrt{3}}\tan\theta$



15. $\displaystyle\int_0^2 \sqrt{16-3x^2}\ dx = \frac{8\pi\sqrt{3}}{9}+2$, use $x = \frac{4}{\sqrt{3}}\sin\theta$



16. $\displaystyle\int_0^3 \frac{27}{\left(9+x^2\right)^2}\,dx = \frac{\pi}{8}+\frac{1}{4}$, use $x = 3\tan\theta$



Part 3

1. $\displaystyle\int_4^8 \sqrt{x^2-16}\ dx = 16\sqrt{3}-8\ln\left(2+\sqrt{3}\right)$

2. $\displaystyle\int_0^1 \frac{1}{\sqrt{x}\left(x+1\right)}\ dx = \frac{\pi}{2}$

3. $\displaystyle\int_{\frac{\pi}{6}}^{\frac{\pi}{3}} \sec x\ dx = \ln\left|\frac{2}{3}\sqrt{3}+1\right|$

4. $\displaystyle\int_0^1 x^3\sqrt{x^2+1}\ dx = \frac{2}{15}\left(\sqrt{2}+1\right)$

5. $\displaystyle\int_{\ln 2}^{\ln 3} \frac{\cosh x+1}{\sinh x\left(\cosh x-1\right)}\ dx = \frac{5}{2}$

6. $\displaystyle\int_1^{\sqrt{3}} x\arctan x\ dx = \frac{5\pi}{12}+\frac{1}{2}\left(1-\sqrt{3}\right)$

7. $\displaystyle\int_{\frac{4}{3}}^{\frac{5}{3}} \frac{x+1}{\sqrt{9x^2-16}}\ dx = \frac{1}{3}\left(1+\ln 2\right)$

8. $\displaystyle\int_{\frac{3}{2}}^{\frac{5}{2}} \sqrt{4x^2-9}\ dx = 5-\frac{9}{4}\ln 3$

9. $\displaystyle\int_0^4 \operatorname{arsinh}\sqrt{x}\ dx = \frac{9}{2}\ln\left(2+\sqrt{5}\right)-\sqrt{5}$

10. $\displaystyle\int_0^1 \frac{x^2}{\sqrt{x^2+1}}\ dx = \frac{1}{2}\left(\sqrt{2}-\ln\left(1+\sqrt{2}\right)\right)$

11. $\displaystyle\int_5^7 \frac{1}{x^2-10x+29}\ dx = \frac{\pi}{8}$

12. $\displaystyle\int_5^7 \frac{1}{\sqrt{x^2-10x+29}}\ dx = \ln\left(1+\sqrt{2}\right)$

13. $\displaystyle\int_{2.5}^{7.5} \frac{180}{4x^2+75}\,dx = \sqrt{3}\pi$

14. $\displaystyle\int_{2}^{3} \frac{1}{\sqrt{3+2x-x^2}}\,dx = \frac{\pi}{3}$

15. $\displaystyle\int_{5}^{7} \frac{x+1}{x^2+9}\,dx = \frac{1}{2}\ln 2 + \frac{\pi}{12}$

16. $\displaystyle\int_{0}^{\frac{\pi}{3}} \frac{1}{9\cos^2 x+\sin^2 x}\,dx = \frac{\pi}{18}$

17. $\displaystyle\int_{0}^{\frac{1}{2}\ln 3} \operatorname{sech} x\,dx = \frac{\pi}{6}$

18. $\displaystyle\int_{0}^{\frac{1}{\sqrt{3}}} \frac{4}{1-x^4}\,dx = \ln\left(\frac{\sqrt{3}+1}{\sqrt{3}-1}\right) + \frac{\pi}{3}$

19. $\displaystyle\int_{0}^{\frac{3}{2}} \frac{8}{4x^2+9}\,dx = \frac{\pi}{3}$

20. $\displaystyle\int_{0}^{1} \frac{10}{(x+1)(x^2+4)}\,dx = \ln\left(\frac{16}{5}\right) + \arctan\left(\frac{1}{2}\right)$

21. $\displaystyle\int_{0}^{3} \frac{8x}{(x+2)(x^2+4)}\,dx = \ln\left(\frac{26}{25}\right) + 2\left(\arctan\left(\frac{1}{2}\right) - \arctan 1\right)$

22. $\displaystyle\int_{0}^{\frac{9}{4}} \frac{1}{\sqrt{x(9-x)}}\,dx = \frac{\pi}{3}$

23. $\displaystyle\int_{-1}^{0} \frac{(x+1)(x+2)}{(x-1)(x^2+1)}\,dx = \frac{\pi}{4} - 2\ln 2$

24. $\displaystyle\int_{0}^{\frac{\pi}{2}} \frac{1}{1+3\cos 3x}\,dx = \frac{\sqrt{2}}{6}\ln\left(\sqrt{2}-1\right)$

25. $\displaystyle\int_{-1}^{1}\frac{1}{\sqrt{x^2+2x+5}}\,dx=\ln\left(1+\sqrt{2}\right)$

26. $\displaystyle\int_{0}^{\sqrt{3}}\frac{x}{x^4+9}\,dx=\frac{\pi}{24}$

27. $\displaystyle\int_{-\frac{5}{3}}^{\frac{5}{6}}\frac{1}{\sqrt{25-9x^2}}\,dx=\frac{2\pi}{9}$

28. $\displaystyle\int_{1}^{2}\sqrt{x^2-2x+2}\,dx=\frac{1}{2}\ln\left(1+\sqrt{2}\right)-\frac{1}{2}\sqrt{2}$

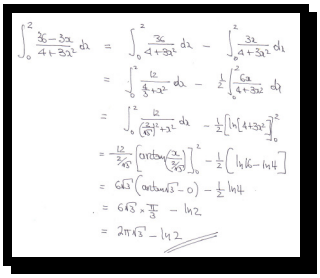
29. $\displaystyle\int_{1}^{2}\frac{\sqrt{x}}{\sqrt{9-x^3}}\,dx=\frac{2}{3}\arccos\frac{1}{3}$

30. $\displaystyle\int_{0}^{\frac{\pi}{4}}\frac{\sec^2 x}{\sqrt{3-\sec^2 x}}\,dx=\frac{\pi}{4}$

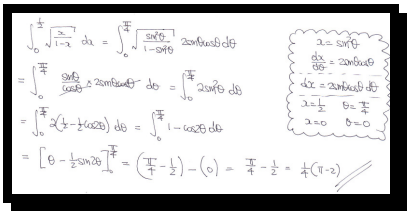
31. $\displaystyle\int_{0}^{2}\frac{1}{\left(x^2+4\right)^{\frac{3}{2}}}\,dx=\frac{1}{8}\sqrt{2}$

32. $\displaystyle\int_{1}^{2}\frac{x^2}{\sqrt{x^2+1}}\,dx=\frac{1}{2}\left[\sqrt{2}-\ln\left(\sqrt{2}+1\right)\right]$

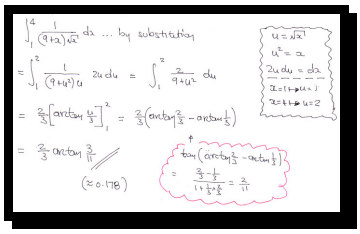
33. $\displaystyle\int_{0}^{2}\frac{36-3x}{4+3x^2}\,dx=2\pi\sqrt{3}-\ln 2$



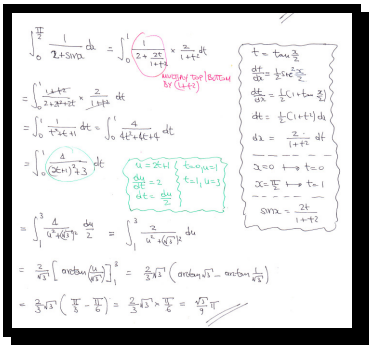
34. $\displaystyle\int_0^{\frac{1}{2}} \sqrt{\frac{x}{1-x}}\ dx = \frac{1}{4}[\pi - 2]$



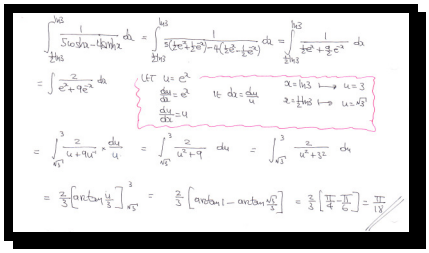
35. $\displaystyle\int_1^4 \frac{1}{(x+9)\sqrt{x}}\ dx = \frac{2}{3}\arctan\left(\frac{3}{11}\right)$



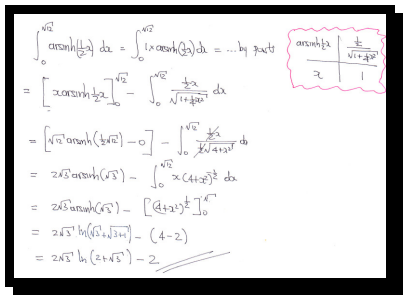
36. $\displaystyle\int_0^{\frac{\pi}{2}} \frac{1}{1+\sin x}\ dx = \frac{\sqrt{3}}{9}\pi$



37. $\displaystyle\int_{\frac{1}{2}\ln 3}^{\ln 3} \frac{1}{5\cosh x - 4\sinh x}\, dx = \frac{\pi}{18}$



38. $\displaystyle\int_{0}^{\sqrt{12}} \operatorname{arsinh}\left(\frac{1}{2}x\right)\, dx = 2\sqrt{3}\ln\left(2+\sqrt{3}\right) - 2$



recognition/substitution

partial fractions

parts

trig identities

mixed tech

antiderivatives/linear adjustment