BINOMIAL EXPANSIONS PRACTICE

Question 1

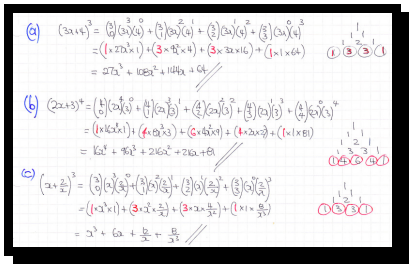
Find, without using a calculator, the binomial expansion of

a) $(3x+4)^3$

b) $(2x+3)^4$

c) $\left(x+\frac{2}{x}\right)^3$

$\boxed{27x^3+108x^2+144x+64}$, $\boxed{16x^4+96x^3+216x^2+216x+81}$, $\boxed{x^3+6x+\frac{12}{x}+\frac{8}{x^3}}$



Question 2

Find the binomial expansion of

a) $(2+4x)^5$

b) $(3-4x)^4$

c) $\left(2x+\frac{3}{x}\right)^6$

$\boxed{1024x^5+2560x^4+2560x^3+1280x^2+320x+32}$, $\boxed{256x^4-768x^3+864x^2-432x+81}$,

$\boxed{64x^6+576x^4+2160x^2+4320+\frac{4860}{x^2}+\frac{2916}{x^4}+\frac{729}{x^6}}$



Question 3

Find, without using a calculator, the binomial expansion of

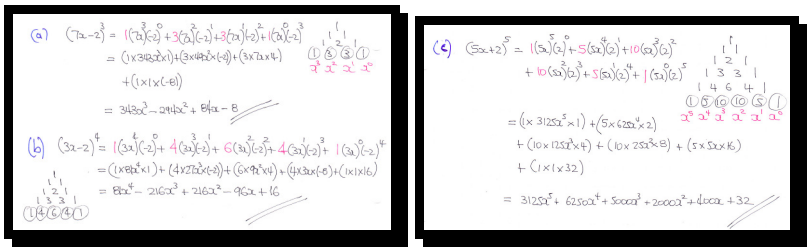
a) $(7x-2)^3$

b) $(5x+2)^5$

c) $(3x-2)^4$

$\boxed{343x^3-294x^2+84x-8}$, $\boxed{3125x^5+6250x^4+5000x^3+2000x^2+400x+32}$,

$\boxed{81x^4-216x^3+216x^2-96x+16}$



Question 4

Find the binomial expansion of

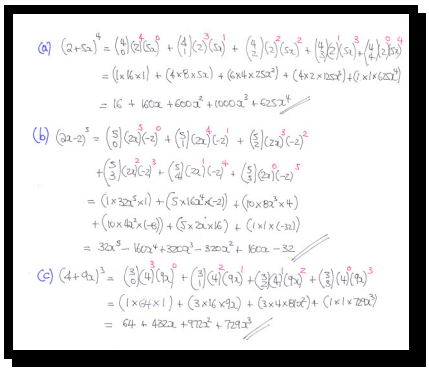
a) $(2+5x)^4$

b) $(2x-2)^5$

c) $(4+9x)^3$

$\boxed{625x^4+1000x^3+600x^2+160x+16}$, $\boxed{32x^5-160x^4+320x^3-320x^2+160x-32}$,

$\boxed{729x^3+972x^2+432x+64}$



Question 5

Find the first **five** terms, in ascending order of x, of the binomial expansion of

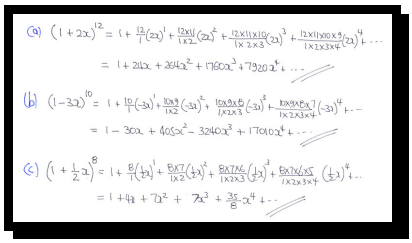
a) $(1+2x)^{12}$

b) $(1-3x)^{10}$

c) $\left(1+\frac{1}{2}x\right)^{8}$

$\boxed{1+24x+264x^2+1760x^3+7920x^4+...}$, $\boxed{1-30x+405x^2-3240x^3+17010x^4-...}$,

$\boxed{1+4x+7x^2+7x^3+\frac{35}{8}x^4+...}$



Question 6

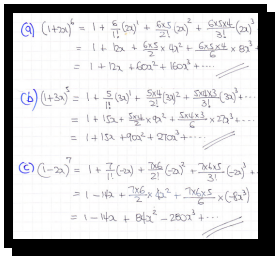
Find, without using a calculator, the first four terms in ascending order of x in the binomial expansion of

a) $(1+2x)^6$

b) $(1+3x)^5$

c) $(1-2x)^7$

$\boxed{1+12x+60x^2+160x^3+...}$, $\boxed{1+15x+90x^2+270x^3+...}$, $\boxed{1-14x+84x^2-280x^3+...}$



Question 8

Find the first **four** terms, in ascending order of x, of the binomial expansion of

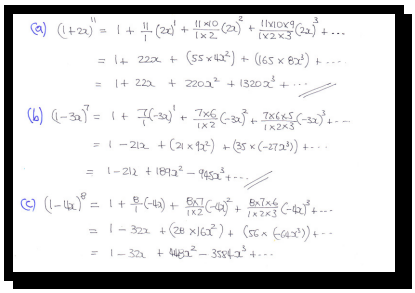
a) $(1+2x)^{11}$

b) $(1-3x)^{7}$

c) $(1-4x)^{8}$

$\boxed{1+22x+220x^2+1320x^3+...}$, $\boxed{1-21x+189x^2-945x^3+...}$,

$\boxed{1-32x+448x^2-3584x^3+...}$



Question 9

Find the value of the constant n in each of the following binomial expansions

a) $(1+3x)^n$, if the coefficient of x^2 is 54.

b) $(1+x)^n$, if the coefficient of x^2 is 55.

$\boxed{n=4,\ n\neq -3}$, $\boxed{n=11,\ n\neq -10}$

