GRAPH SKETCHING

(1) Sketch the following curves and indicate clearly the points of intersection with the axes

a) $y = (x-3)(x-2)(4-x)$

b) $y = x(2x-1)(x+3)$

c) $y = (x+1)^2(x-1)$

d) $y = (x-1)^2(3-x)$

e) $y = x^2(x-2)$

f) $y = x^3 + x^2 - 2x$

g) $y = x^3 - x^2$

h) $y = 12x^3 - 3x$

i) $y = x^3 - 9x$

j) $y = x^3 - 9x^2$

(2) Sketch the following curves and show their positions relative to the curve $y = x^3$

a) $y = (x-2)^3$

b) $y = (2-x)^3$

c) $y = (x+2)^3$

d) $y = -(x+2)^3$

e) $y = (x+3)^3$

f) $y = (x-3)^3$

g) $y = (1-x)^3$

h) $y = -(x-2)^3$

i) $y = -(x-\frac{1}{2})^3$

Indicate clearly the co-ordinates of the points where the curves cross the axes

(3) Use a separate diagram to sketch each pair of graphs

a) $y = \frac{2}{x}$ and $y = \frac{4}{x}$

b) $y = \frac{2}{x}$ and $y = -\frac{2}{x}$

c) $y = -\frac{3}{x}$ and $y = -\frac{8}{x}$

(4) Apply the following transformations to the curve $f(x) = x^2$

a) $f(x+2)$ b) $f(x)+2$ c) $f(x-1)$
d) $f(x)-1$ e) $f(x)-3$ f) $f(x-3)$
g) $f(2x)$ h) $f(-x)$ i) $f(\frac{1}{2}x)$
j) $2f(x)$ k) $-f(x)$

(5) Repeat question (4) for the curve $f(x) = x^3$

(6) Repeat question (4) for the curve $f(x) = \frac{1}{x}$