1 (a) Expand and simplify (x + 4)(x - 2)(x + 1)

Expand first 2 terms :

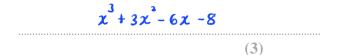
$$(x+4)(x-2) = x^2 - 2x + 4x - 8$$

= $x^2 + 2x - 8$ (1)

Multiply with the remaining term:

$$(x^{2}+3x-8)(x+1) = x^{3}+x^{2}+2x^{2}+2x-8x-8$$

$$= x^{3}+3x^{2}-6x-8$$



2 (a) Expand and simplify (3x-1)(x+2)(3x+1)

Expand first 2 terms:

$$(3x-1)(x+2) = 3x^{2}+6x-x-2$$

= $3x^{2}+5x-2$

Expand remaining term :

$$(3x^{2}+5x-2)(3x+1) = 9x^{3}+3x^{2}+15x^{2}+5x-6x-2 \bigcirc$$

$$= 9x^{3}+18x^{2}-x-2 \bigcirc$$

$$9x^{3} + 18x^{2} - x - 2$$
(3)

3 (a) Expand and simplify (5-x)(2x+3)(x+4)Show your working clearly.

$$(5-x)(2x+3) = 10x + 15 - 2x^2 - 3x$$

= $-2x^2 + 7x + 15$

$$(-2x^{2}+7x+15)(2+4) = -2x^{3}-8x^{2}+7x^{2}+28x+15x+60$$
$$= -2x^{3}-x^{2}+43x+60$$

$$\frac{3}{3} - 2x^{3} - x^{2} + 432 + 60$$

4 (a) Expand and simplify n(n-4)(3n+5)

$$(n-4)(3n+5) = 3n^{2}+5n-12n-20$$

= $3n^{2}-7n-20$

$$n (3n^{2} - 7n - 20)$$

$$= 3n^{3} - 7n^{2} - 20n$$

5 (a) Expand and simplify 5x(x+2)(3x-4)

$$(x+2)(3x-4) = 3x^{2}-4x+6x-8$$

$$= 3x^{2}+2x-8$$

$$5x(3x^{2}+2x-8)$$

$$15x^{3}+10x^{2}-40x$$

6 (c) Expand and simplify 5x(3x + 4)(2x - 1)

$$(3x+4)(2x-1) = 6x^2-3x+8x-4$$

= $6x^2+5x-4$ (1)

$$5x(6x^{2}+5x-4)$$

$$= 30 x^{3} + 25 x^{2} - 20 x (1)$$

30 x + 25 x - 20 x

(3)

(Total for Question 6 is 3 marks)

7 Expand and simplify $3x(2x-5)^2$ Show clear algebraic working.

$$(2x-5)^{2} = 4x^{2} - 20x + 25$$

$$= 12x^{3} - 60x + 75x$$

12x - 60x + 75x

8 (a) Expand and simplify (x + 6)(3x - 2)(x + 6)

$$3x^{3} + 34x^{2} + 84x - 72$$
 (3)