JP Maths Revision

Expanding Triple Brackets

Exam Style Questions

1. Expand and simplify $(x + 1)(x + 2)(x + 3)$

$(x+1)(x^2+5x+6)$

$x^3+5x^2+6x+x^2+5x+6$

$x^3+6x^2+11x+6$

$x^3+6x^2+11x+6$ ..... (3 marks)

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2. Expand and simplify $(2x - 1)(x + 2)(x - 5)$

$(2x-1)(x^2-3x-10)$

$2x^3-6x^2-20x-x^2+3x+10$

$2x^3-7x^2-17x+10$

$2x^3-7x^2-17x+10$ ..... (3 marks)

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3. Expand and simplify $(3x - 1)(2x + 1)(x - 4)$

$(3x-1)(2x^2-7x-4)$

$6x^3-21x^2-12x-2x^2+7x+4$

$6x^3-23x^2-5x+4$

$6x^3-23x^2-5x+4$ ..... (3 marks)

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4. Expand and simplify $(7x - 1)(x - 3)(2x - 5)$

$(7x-1)(2x^2-11x+15)$

$14x^3-77x^2+105x-2x^2+11x-15$

$14x^3-79x^2+116x-15$ ..... (3 marks)

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5. Expand and simplify $2(x - 1)(x + 1)^2$

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

$2x^3+4x^2+2x-2x^2-4x-2$

$2x^3+2x^2-2x-2$ ..... (3 marks)

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6. Expand and simplify $(x - 1)^3$

$(x-1)(x-1)(x-1)$

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

$x^3-2x^2+x-x^2+2x-1$

x^3-3x^2+3x-1 ..... (3 marks)

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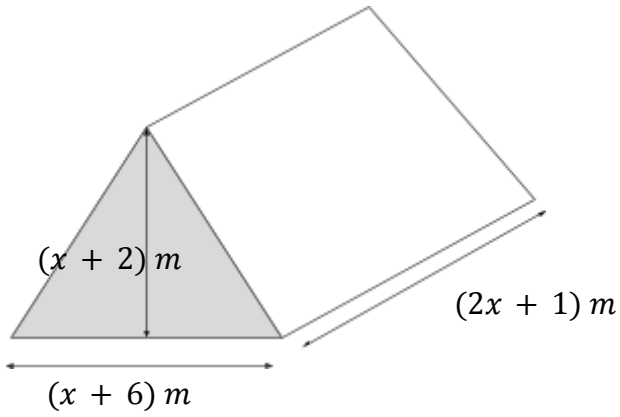
7. Below is a triangular prism with base $(x + 6)\ m$, height $(x + 2)\ m$ and width $(2x + 1)\ m$. Show that the volume, V, of the triangular prism is $V = (x^3 + 8.5x^2 + 16x + 6)\ m^3$.



$$V = \frac{(x+2)(x+6)(2x+1)}{2}$$

$$= \frac{(x^2+8x+12)(2x+1)}{2}$$

$$= \frac{2x^3+x^2+16x^2+8x+24x+12}{2}$$

(4 marks)

$$= \frac{2x^3+17x^2+32x+12}{2}$$

$$= x^3+8.5x^2+16x+6$$