1 (a) Simplify fully $\dfrac{x^2+9x+14}{x^2-4}$

[3 marks]

$x^2+9x+14 = (x+2)(x+7)$ (1)

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

$\dfrac{(x+2)(x+7)}{(x+2)(x-2)} = \dfrac{x+7}{x-2}$ (1)

Answer $\dfrac{x+7}{x-2}$

2 Circle the correct statement.

[1 mark]

$3x \equiv x + 2x$ $3x \equiv 2$ $3x + x \equiv 2 - x$ $3x + x - 2 \equiv 0$

3 Show that $(3x + 4)(2x - 5) - 11x(x - 2) + 5(x^2 - 3x - 1)$ simplifies to an integer.

[4 marks]

$6x^2 - 15x + 8x - 20 - 11x^2 + 22x + 5x^2 - 15x - 5$ (1) (1) (1)

$= 6x^2 - 11x^2 + 5x^2 - 15x + 8x + 22x - 15x - 20 - 5$

$= -25$ (1)

4 (a) Show that $4x(3x+2)-2x^2\left(6-\frac{5}{x}\right)-6x\left(3+\frac{7}{x}\right)$ simplifies to an integer.

[3 marks]

$12x^2+8x-12x^2+10x-18x-42$ ✓ (1)

$= 12x^2-12x^2+8x+10x-18x-42$

$= -42$ ✓ (1)