

Mathematics (National 5) USAP 3(b) Homework – Ink Exercise

1. Simplify:

(a) $\frac{19}{57}$ (b) $\frac{w^3}{w}$ (c) $\frac{5x}{10}$ (d) $\frac{12x^2}{36x}$ (4)

2. Simplify:

(a) $\frac{(2x+1)}{(2x+1)(2x-1)}$ (b) $\frac{x^2+5x+6}{(x+3)}$ (c) $\frac{x^2-x-6}{x^2+4x+4}$ (1, 2, 3)

3. Simplify:

(a) $\frac{m}{5} + \frac{m}{4}$ (b) $\frac{m+4}{2} + \frac{m-3}{5}$ (c) $\frac{4}{x} - \frac{1}{x+3}$ (d) $\frac{x+1}{x+2} + \frac{x-2}{x+1}$ (1, 2, 2, 3)

4. Express each of the following in its simplest form.

(a) $\frac{7}{3k} \times \frac{9k}{21}$ (b) $\frac{3x}{5} \times \frac{2}{9x^2}$ (c) $\frac{1}{a^2} \div \frac{2}{a}$ (d) $\frac{2x}{y} \div \frac{4x^2}{3y}$ (1, 2, 2, 2)

5. Solve these quadratic equations algebraically.

(a) $5x^2 - 15x = 0$ (b) $6x^2 - 7x - 3 = 0$ (5)

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6. Solve the equation $3x^2 - 3x - 5 = 0$, giving your answer correct to 2 decimal places. (4)

7. Solve the equation $4x(x - 2) = 7$, giving your answer correct to 1 decimal place. (5)

3. Use the discriminant to determine the nature of the roots of these quadratic equations.

(a) $x^2 - 6x + 8 = 0$

(b) $4x^2 + x + 3 = 0$

(5)

Total – 44 marks