

### Quiz 9

Question 1. (6 marks) Solve for x:

$$\frac{x+4}{x^2-3x+2} - \frac{5}{x^2-4x+3} - \frac{x-4}{x^2-5x+6} = 0$$

$$\frac{x+4}{(x-2)(x-1)} - \frac{5}{(x-3)(x-1)} - \frac{x-4}{(x-3)(x-2)} = 0$$

MULTIPLY EACH TERM BY  
 LCD = (x-3)(x-1)(x-2)

$$(x+4)(x-3) - 5(x-2) - (x-4)(x-1) = 0$$

$$x^2 + x - 12 - 5x + 10 - (x^2 - 5x + 4) = 0$$

$$x^2 - 4x - 2 - x^2 + 5x - 4 = 0$$

$$x - 6 = 0$$

$$x = 6 \text{ VALID}$$

$$\boxed{x=6}$$

Question 2. (4 marks) Double a number minus 10 times its reciprocal is  $\frac{8}{3}$ . Find the number.

LET  $x$  BE THE NUMBER

$$2x - 10 \cdot \frac{1}{x} = \frac{8}{3} \quad \text{LCD} = 3x$$

$$2x - \frac{10}{x} = \frac{8}{3}$$

$$3x(2x) - 3x \frac{10}{x} = 3x \cdot \frac{8}{3}$$

$$6x^2 - 30 = 8x$$

$$6x^2 - 8x - 30 = 0$$

$$2(3x^2 - 4x - 15) = 0$$

$$2(3x^2 - 9x + 5x - 15) = 0$$

$$2[3x(x-3) + 5(x-3)] = 0$$

$$2(3x+5)(x-3) = 0$$

$$3x+5=0 \quad x-3=0$$

$$3x=-5 \quad x=3$$

$$x = -\frac{5}{3}$$

BOTH VALID

THE NUMBER IS

$-\frac{5}{3}$  OR 3.