FURTHER ALGEBRAIC TECHNIQUES - CHAPTER REVIEW

1 Solve:

(a) $5a - 6 = 4(2a + 3)$ **(b)** $3(8a - 2) - 3(2a + 4) = 0$ **(c)** $8(x + 2) - 3(x + 5) = 2(x - 2)$

2 Solve:

(a) $\frac{x}{5} = \frac{3}{20}$ **(b)** $\frac{3x - 1}{5} = \frac{x}{20}$ **(c)** $\frac{x - 2}{x + 3} = \frac{3}{5}$

3 Solve, showing your solution on a number line:

(a) $\frac{3x-2}{5} > 2$ **(b)** $-8 \leq 3x-2 < 16$ **(c)** $|x-1| > 1$

4 Solve:

(a) $x^2 = 4$ **(b)** $x^2 = 4x$ **(c)** $x^2 = 4x - 4$

(d) $(x^2 - 3x)^2 = 16$ **(e)** $(x^2 - 3x - 10)(x^2 - 3x - 4) = 0$ **(f)** $6x^2 + 7x - 3 = 0$

5 The hypotenuse of a right-angled triangle is $(x + 1)$ cm in length and the other two sides are x cm and $(x - 7)$ cm. Form an equation and solve it to find the length of each side.

6 Solve the quadratic equation $2x^2 - x - 5 = 0$, giving your solutions:

(a) in simplest surd form **(b)** correct to 2 decimal places.

7 Find the solutions of the equation $\frac{x}{x+1} - \frac{1}{x+2} = 3$ as surds.

8 Expand and simplify $(2x - y)(x^2 - xy + y^2)$.

9 Simplify: $\dfrac{2}{m^2-4}-\dfrac{1}{m^2-3m+2}$

11 The perimeter of a rectangle is 18 cm and its area is 20 cm^2.

(a) If the length is x cm, express the breadth in terms of x.

(b) Write the area in terms of x.

(c) Form a quadratic equation in x and solve it to find the length and breadth.

12 If $n \geq 0$, solve $200 = \frac{n}{2}(6 + 2(n-1))$, rounding your answer to the nearest integer.

13 Solve $12x^3 + 12x^2 - 24x = 0$.

14 Solve $\frac{a-x}{x} = \frac{x}{b-x}$ for x.

15 If $x > 0$, solve $22^2 = x^2 + 20^2 - 40x\cos 60°$, giving your answer to the nearest integer.