

Q.1 Factorise

a) $x^2 - 9x + 8$

$$\begin{array}{r} +8 \\ (-1)(-8) \\ (-2)(-4) \end{array}$$

$$\begin{array}{r} -1x \\ -8x \\ -9x \end{array} \checkmark$$

$$(x - 1)(x - 8)$$

b) $2x^2 + 17x + 21$

$$\begin{array}{r} +21 \\ (1)(21) \\ (3)(7) \end{array}$$

$$\begin{array}{r} 3x \\ 14x \\ 17x \end{array} \checkmark$$

$$(2x + 3)(x + 7)$$

c) $7x^2 - 32x - 60$

$$\begin{array}{r} -60 \\ (-1)(+60) \\ (-2)(+30) \\ (-3)(+20) \\ (-4)(+15) \\ (-5)(+12) \\ (-6)(+10) \end{array} ?$$

$$\begin{array}{r} +10x \\ -42x \\ -32x \end{array} \checkmark$$

$$(7x + 10)(x - 6)$$

Solve = "find x"
In a quadratic
there are 2 solutions

2 ways

- Factorise method ✓
- formula

2. Solve the equations

a)

$$x^2 - 2x - 15 = 0$$

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

$x = 5$ | $x = -3$

Steps

① Factorise

② write solutions

b)

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

$$(2x - 1)(x - 2) = 0$$

$2x - 1 = 0$ | $x = 2$

$$2x = 1$$

$$x = \frac{1}{2}$$

Simultaneous Equation

4. Solve

$$\begin{aligned} X^2 + y^2 &= 10 && \text{[Quadratic/Circle]} \\ X - y &= 4 && \text{[Line]} \end{aligned}$$

① Rewrite the line so $X=?$ or $y=?$

$$X - y = 4 \quad (+y) \Rightarrow \boxed{X = y + 4} \quad \text{①}$$

② Sub in this new $y=?$ or $x=?$ into Quadratic

$$X^2 + y^2 = 10$$

$$(y+4)^2 + y^2 = 10$$

$$y^2 + 8y + 16 + y^2 = 10$$

$$2y^2 + 8y + 6 = 0$$

$$y^2 + 4y + 3 = 0$$

$$(y+3)(y+1) = 0$$

$$\boxed{y = -3 \mid y = -1}$$

④ Sub ans. back into equation in ①

$$y = -3$$

$$X = y + 4 = -3 + 4 = 1$$

pt (1, -3)

$$y = -1$$

$$X = y + 4 = -1 + 4 = 3$$

pt (3, -1)

$$\begin{aligned} & (y+4)^2 \\ & \quad y \quad +4 \\ & \quad y \quad \begin{array}{|c|c|} \hline y^2 & +4y \\ \hline \end{array} \\ & +4 \quad \begin{array}{|c|c|} \hline +4y & +16 \\ \hline \end{array} \\ & = y^2 + 8y + 16 \end{aligned}$$