

• i) $x^2 + 8x + 15 = 0$

Foil $(x + 5)(x + 3)$

$$x^2 + 3x + 5x + 15 = 0$$

$$x^2 + 8x + 15 = 0$$

Solve

$$x + 5 = 0$$

$$\boxed{x = -5}$$

$$x + 3 = 0$$

$$\boxed{x = -3}$$

ii) $x^2 - 225 = 0$

$$\sqrt{15}$$

Foil $(x + 15)(x - 15)$

$$x^2 - 15x + 15x - 225 = 0$$

$$\boxed{x = -15}$$

$$\boxed{x = 15}$$

$$\text{iii) } x^2 + 11x + 30 = 0$$

$$(x + 6) \quad (x + 5)$$

$$x^2 + 5x + 6x + 30 = 0$$

$$x^2 + 11x + 30 = 0$$

Solve

$$x + 6 = 0$$

$$x + 5 = 0$$

$$\boxed{x - 6}$$

$$\boxed{x - 5}$$

$$\text{iv) } x^2 - 6x + 8 = 0 - 42$$

$$(x - 4) \quad (x - 2)$$

$$x^2 - 2x - 4x + 8 = 0$$

$$\boxed{-6x}$$

Solve

$$x - 4 = 0$$

$$x - 2 = 0$$

$$\boxed{x = 4}$$

$$\boxed{x = 2}$$

1. v) $2x^2 + ax + 7 = 0$ 3 of 8

$\frac{a}{b} \quad \frac{c}{1 \times 7}$

Foil $(2x + 1)(x + 7)$

$$2x^2 + 14x + x + 7 = 0$$

$$(2x + 7)(x + 1) \quad 7 \times 1$$

$$2x^2 + 7x + 2x + 7 = 0$$

Solve

$$\underbrace{7x + 2x}_{+9x} \checkmark$$

$$2x + 7$$

$$x + 1$$

$$2x = -7$$

$$\boxed{x = \frac{-7}{2}}$$

$$\boxed{x = -1}$$

a

2. $12x^2 + 5x = 7$

$\frac{a}{b} \quad \frac{c}{c}$

$$\frac{-5 \pm \sqrt{(5)^2 - 4(12)(7)}}{2(12)}$$

$$\frac{-5 \pm \sqrt{25 - 336}}{24} = -311$$

$$\swarrow \quad \searrow$$

$$\frac{-5 + 17.64}{24}$$

$$\frac{-5 - 17.64}{24}$$

3

$$5x + 2y = 22 \quad (1)$$

$$4x + 3y = 19 \quad (2)$$

(3)

(4)

~~$$15x + 6y = 66$$

$$8x + 6y = 38$$

$$7x = 28$$

$$x = \frac{28}{7}$$

$$x = 4$$~~

$$\begin{array}{rcl} 15x & + & 6y = 66 \\ - & & \\ 8x & + & 6y = 38 \end{array}$$

$$7x = 28$$

$$x = \frac{28}{7}$$

$$\boxed{x = 4} \rightarrow (1)$$

$$5(4) + 2y = 22$$

$$20 + 2y = 22$$

$$2y = 22 - 20$$

$$2y = 2$$

$$\boxed{y = 1}$$

5 of 8

$$4) i) x^8 \times x \times x^9 \\ = \underline{x^{18}}$$

$$ii) (2x^3)^3 = \underline{8x^9}$$

$$iii) \frac{x^{12} \times x^8}{x} = \frac{x^{20}}{x} \\ = \underline{x^{19}}$$

$$iv) 5x^2 \times 3x^4 \\ = \underline{15x^6}$$

$$v) \frac{10x^5}{2x^2} = \underline{5x^3}$$

$$5) : 2(x^2 + y^2) + x^2(x-y) + 3xy$$

$$2x^2 + 2y^2 + \cancel{x^3} - x^2y + 3xy$$

$$2x^2 + 2y^2 - x^2y + 3xy$$

$$6. i) 5(2x + 1) = 4(3x + 2)$$

$$10x + 5 = 12x + 8$$

$$\begin{array}{r} \rightarrow \\ 5 - 8 \end{array} = 12x - 10x$$

$$-3 = 2x$$

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

$$\boxed{x = -1.5}$$

$$ii) 12x + 5 = 4x - 1$$

$$12x - 4x = -1 - 5$$

$$8x = -6$$

$$x = \frac{-6}{8}$$

$$\boxed{x = -0.75}$$

7 of 8

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

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

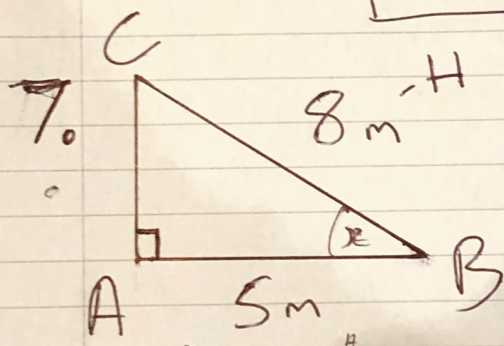
$$8x - 2 = 15x + 6$$

$$-2 - 6 = 15x - 8x$$

$$-8 = 7x$$

$$\frac{-8}{7} = x$$

$$\boxed{-1.14 = x}$$



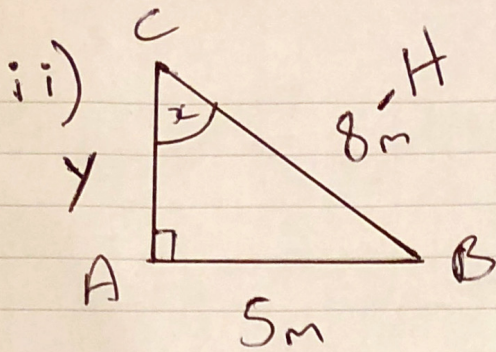
i) $\cos x = \frac{5}{8}$

$$\cos x = 0.625$$

$$x = \cos^{-1}(0.625)$$

$$x = 51.3178^\circ$$

80-8



$$x = 180 - 90 - 51.32$$

$$= \underline{\underline{38.68^\circ}}$$

iii)

$$(8)^2 = (5)^2 + (AC)^2$$

$$64 = 25 + (AC)^2$$

$$64 - 25 = AC^2$$

$$39 = AC^2$$

$$\underline{\underline{6.245m = AC}}$$