

Q1) a) (i) $S(2x-1) = 11(x+6)$

$$10x - 5 = 11x + 66$$

$$-5 - 66 = 11x - 10x$$

$$\boxed{-71 = x}$$

(ii) $\frac{9}{(5x+4)} = \frac{1}{(6x-1)}$

$$9(6x-1) = 1(5x+4)$$

$$54x - 9 = 5x + 4$$

$$54x - 5x = 4 + 9$$

$$49x = 13$$

$$\boxed{x = \frac{13}{49} = 0.27}$$

(iii) $(x+7)(x+2) = (x+1)(x-8)$

$$x^2 + 9x + 14 = x^2 - 7x - 8$$

$$9x + 14 = -7x - 8$$

$$9x + 7x = -8 - 14$$

$$16x = -22$$

$$x = \frac{-22}{16} = \boxed{-1.38}$$

$$(iv) \quad x(3x+2) + 5x - 1 = 0$$

$$3x^2 + 7(3x+2) + 5x - 1 = 0$$

$$21x + 14 + 5x - 1 = 0$$

$$26x + 13 = 0$$

$$26x = -13$$

$$x = \frac{-13}{26} = -0.5$$

$$b) \quad (i) \quad x^3 \times x^2 \times x$$

$$= x^6$$

$$(ii) \quad \sqrt{x^2 \times x^3 \times x^5}$$

$$= \sqrt{x^{10}}$$

$$= x^{10/2} = x^5$$

$$(iii) \quad \frac{x^2 \times x^4}{x^3}$$

$$= \frac{x^6}{x^3}$$

$$= x^3$$

$$(iv) 2x^2 \times 5x^3$$

$$= 10x^5$$

$$c) (i) x^2 + 8x + 15 = 0$$

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

$$x+5=0$$

$$x+3=0$$

$$x = -5$$

$$x = -3$$

$$(ii) x^2 + 6x + 8 = 0$$

$$(x+4)(x+2) = 0$$

$$x+4=0$$

$$x+2=0$$

$$x = -4$$

$$x = -2$$

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

$$(x+5)(x-1) = 0$$

$$x+5=0$$

$$x-1=0$$

$$x = -5$$

$$x = 1$$

$$(iv) \quad 2x^2 + 9x + 4 = 0$$

$$(2x+1)(x+4) = 0$$

$$2x+1=0$$

$$x+4=0$$

$$2x = -1$$

$$x = -4$$

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

$$(v) \quad x^2 + 10x + 21 = 0$$

$$(x+7)(x+3) = 0$$

$$x+7=0$$

$$x+3=0$$

$$x = -7$$

$$x = -3$$

$$e) \quad 8x^2 + 11x - 7 = 0$$

$$x = \frac{-11 \pm \sqrt{(11)^2 - 4(8)(-7)}}{2(8)}$$

$$x = \frac{-11 \pm \sqrt{121 + 224}}{16}$$

$$x = \frac{-11 \pm \sqrt{345}}{16}$$

$$x = \frac{-11 \pm 18.57}{16}$$

$$x = \frac{-11 + 18.57}{16}$$

$$x = 0.47$$

$$x = \frac{-11 - 18.57}{16}$$

$$x = -1.85$$

$$f) \quad 5gr + 3t^2 = x^s \quad [t]$$

$$3t^2 = x^s - 5gr$$

$$t^2 = \frac{x^s - 5gr}{3}$$

$$t = \sqrt{\frac{x^s - 5gr}{3}}$$

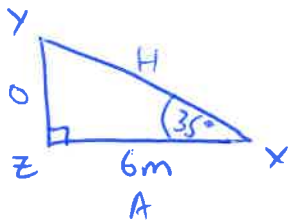
|

|

|

Q2)

a)



$$\tan 35^\circ = \frac{YZ}{6}$$

|

|

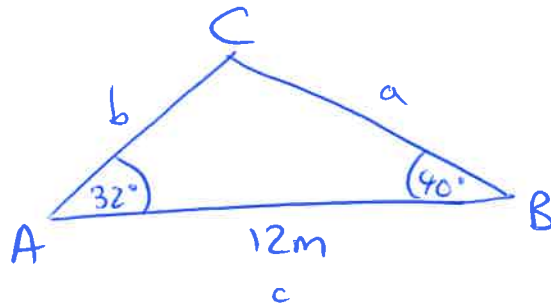
$$0.7 = \frac{YZ}{6}$$

|

$$4.2m = YZ$$

|

b)



$$\hat{C} = 180 - 32 - 40$$

$$\hat{C} = 108^\circ$$

Sine Rule

$$\frac{BC}{\sin 32} = \frac{AC}{\sin 40} = \frac{12}{\sin 108}$$

$$\frac{AC}{\sin 40} = \frac{12}{\sin 108}$$

$$AC = \frac{12 \sin 40}{\sin 108}$$

$$AC = \frac{7.71}{0.95}$$

$$AC = 8.12m$$

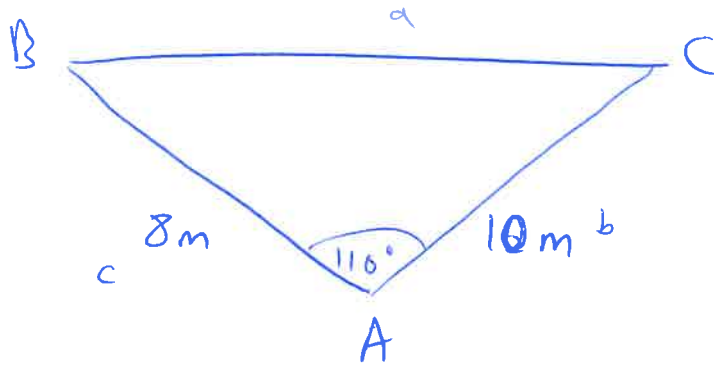
$$\frac{BC}{\sin 32} = \frac{12}{\sin 108}$$

$$BC = \frac{12 \sin 32}{\sin 108}$$

$$BC = \frac{6.36}{0.95}$$

$$BC = 6.69m$$

c)



Cosine Rule

$$(BC)^2 = (10)^2 + (8)^2 - 2(10)(8) \cos 110^\circ$$

$$(BC)^2 = 100 + 64 - 160(-0.34)$$

$$(BC)^2 = 164 + 54.4$$

$$BC = \sqrt{218.4}$$

$$BC = 14.78m$$

Total Marks 68

