

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

4)

$$14x^2 + 3x = 11$$

$$14x^2 + 3x - 11 = 0$$

$$x = \frac{-3 \pm \sqrt{(3)^2 - 4(14)(-11)}}{2(14)}$$

~~$$x = \frac{-3 \pm \sqrt{153}}{28}$$~~

$$x = \frac{11}{14}$$

~~$$x = 0.79$$~~

$$x = 0.79$$

$$x = \frac{-3 - \sqrt{(3)^2 - 4(14)(-11)}}{2(14)}$$

$$x = -1.00$$

5)

$$\textcircled{1} \quad 5x + 3y = 39$$

$$\textcircled{2} \quad 8x - 2y = 42$$

$$\textcircled{3} \quad 10x + 6y = 78$$

$$\textcircled{4} \quad 24x - 6y = 126$$

$$\begin{cases} \times 2 \\ \times 3 \end{cases}$$

$$\textcircled{4} - \textcircled{2}$$

$$24x - 10x - 6y + 6y = 126 - 78$$

$$14x = 48$$

$$x = \frac{48}{14}$$

$$x = 3.428571$$

$$8(3.428571) - 2y = 42$$

$$27.428568 - 2y = 42$$

$$-2y = 42 - 27.428568$$

$$-2y = 14.571432$$

$$-y = \frac{4.571432}{-2}$$

$$-y = -7.285716$$

$$y = 7.285716$$

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$$\text{iii)} \quad \frac{5x+3}{4} = \frac{2x-1}{9}$$

$$9(5x+3) = 4(2x-1)$$

$$45x+27 = 8x-4$$

$$45x-8x+27 = -4$$

$$37x = -4-27$$

$$37x = -31$$

$$x = \frac{-31}{37}$$

$$x = 0.837$$

$$3) \quad x^2 + 10x + 21 = 0$$

$$\text{i)} \quad (x+3)(x+7)$$

$$x^2 + 7x + 3x + 21$$

$$x+3=0$$

$$x+7=0$$

$$x = 0-3$$

$$x = 0-7$$

$$x = -3$$

$$x = -7$$

$$\text{iii)} \quad x^2 + 12x + 20 = 0$$

$$(x+10)(x+2)$$

$$x^2 + 2x + 10x + 20 = 0$$

$$x+10=0$$

$$x+2=0$$

$$x = 0-10$$

$$x = 0-2$$

$$x = -10$$

$$x = -2$$

$$\text{ii)} \quad x^2 - 3x + 2 = 0$$

$$(x-2)(x-1)$$

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

$$x-2=0$$

$$x-1=0$$

$$x = 0+2$$

$$x = 0+1$$

$$x = 2$$

$$x = 1$$

$$\text{iv)} \quad x^2 - 64 = 0$$

$$(x+8)(x-8)$$

$$x^2 + 8x + 8x - 64 = 0$$

$$x+8=0$$

$$x-8=0$$

$$x = 0-8$$

$$x = 0+8$$

$$x = -8$$

$$x = 8$$

$$\text{v)} \quad 2x^2 + 9x + 10 = 0$$

$$(2x+5)(x+2)$$

$$2x^2 + 4x + 5x + 10 = 0$$

$$2x+5=0$$

$$x+2=0$$

$$2x = 0-5$$

$$x = 0-2$$

$$x = \frac{-5}{2}$$

$$x = -2$$

$$x = -2.5$$

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1)

$$i) x^4 \times x^6 \times x \\ = x^{11}$$

$$iv) (3x^2)^3$$

$$3x^2 \times 3x^2 \times 3x^2 = 27x^6$$

$$ii) 2x^2 \times 3x^3 \times 2x \\ 6x^5 \times 2x \\ = 12x^5$$

$$v) \sqrt{x} \times \sqrt{x} \\ x^{\frac{1}{2}} \times x^{\frac{1}{2}} = x^{\frac{1}{4}}$$

$$iii) \frac{x^4 \times x^3 \times x^2}{x^9} \\ \frac{x^9}{x^9} \\ = x$$

2)

$$i) 15x + 10x + 21 = 0$$

$$15x - 2 = 12x + 9$$

$$15x - 12x - 2 = 9$$

$$3x - 2 + 4 = 0$$

$$3x + 7 = 0$$

$$3x = 9 + 2$$

$$3x = 11$$

$$x = \frac{11}{3}$$

$$x = 3.6$$

$$ii) 3(2x - 1) = 6(x + 3)$$

$$21x - 3 = 6x + 18$$

$$21x - 6x - 3 = 18$$

$$15x - 3 = 18$$

$$15x = 18 + 3$$

$$15x = 21$$

$$x = \frac{21}{15}$$

$$x = 1.4$$

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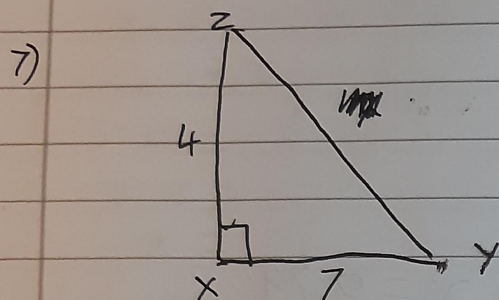
8)

$$\begin{aligned} \text{i)} \quad & \sqrt[3]{x} \\ & = x^{\frac{1}{3}} \end{aligned}$$

ii)

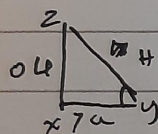
$$\begin{aligned} & 1 \\ & = x^0 \end{aligned}$$

6) $5(2x^2 - y^2) - x^2(x^2 - y) - x^2y - x^4$
 ~~$10x^2 - 5y^2 - x^4 - x^2y + x^2y - x^4$~~ $10x^2 - 5y^2 - x^4 - x^2y + x^2y - x^4$
 $10x^2 - 5y^2 - x^4 - x^4$ $10x^2 - 5y^2 + 10x^5$



i) angle y

$\sin \theta \quad \cos \theta \quad \tan \theta$



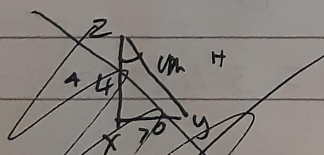
$y = \tan^{-1} \left(\frac{4}{7} \right) = \left(\frac{4}{7} \right)$

$y = 29.74^\circ$

~~$y = \sin^{-1} \left(\frac{4}{7} \right)$~~
 ~~$y = 34.85^\circ$~~

to 2 decimal places.

ii) Angle z



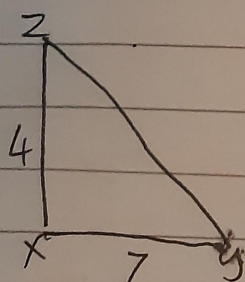
$z = \tan^{-1} \left(\frac{7}{4} \right)$

$z = 60.26^\circ$

~~$z = \cos^{-1} \left(\frac{4}{7} \right)$~~
 ~~$z = 55.15^\circ$~~

to 2 decimal places.

iii) Length of YZ



$YZ^2 = (XY)^2 + (XZ)^2$

$YZ^2 = (4)^2 + (7)^2 = 65$

$\sqrt{65} = 8.06$

$YZ = 8.06$