

3 pm

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1)

i)  $x^{11}$

ii)  $12x^6$

iii)  $\frac{x^4 \times x^3 \times x^2}{x^9} = \frac{x^9}{x^9} = 1$

iv)  $27^6$

v)  $\sqrt{x} \times \sqrt{x} = x^{1/2} \times x^{1/2} = 1$   
or  $x$

2. i)  $15x - 2 = 12x + 9$

$15x - 12x = 9 + 2$

$3x = 11$

$x = \frac{11}{3} \quad x = 3.6$

ii)  $3(7x - 1) = 6(x + 3)$

$21x - 3 = 6x + 18$

$21x - 6x = 18 + 3$

$15x = 21$

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

$x = 1.4$

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

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

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

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

$$37x = -31$$

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

$$x = -0.837$$

3. i)  $x^2 + 10x + 21 = 0$   $\underline{7 \times 3}$

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

Foil

$$x^2 + 3x + 7x + 21 = 0 \quad \checkmark$$

$$x = 0 - 7$$

$$x = 0 - 3$$

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

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

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3. ii)  $x^2 - 3x + 2 = 0$

$$\text{Foil } (x - 1)(x - 2) \quad \underline{-1 - 2}$$

$$x^2 - 2x - 1x + 2 = 0 \quad \checkmark$$

$x = 0 + 1$

$\boxed{x = 1}$

$x = 0 + 2$

$\boxed{x = 2}$

iii)  $x^2 + 12x + 20 = 0$

$$\text{Foil } (x + 10)(x + 2) \quad \underline{10 \times 2}$$

$$x^2 + 2x + 10x + 20 \quad \checkmark$$

$x = 0 - 10$

$\boxed{x = -10}$

$x = 0 - 2$

$\boxed{x = -2}$

iv)  $x^2 - 64 = 0$

$\sqrt{64} = 8$

$\boxed{x = 8} \quad \boxed{x = -8}$

v)  $2x^2 + 9x + 10 = 0$

$$\text{Foil } (2x + 5)(x + 2)$$

$$2x^2 + 4x + 5x + 10 \quad \checkmark$$

$$\begin{array}{l} 1 \times 10 \\ 2 \times 5 \\ 5 \times 2 \\ 10 \times 1 \end{array}$$

$2x + 5 = 0$

$x + 2 = 0$

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$$3v - 2x = 0 - 5$$

$$2x = -5$$

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

$$\boxed{x = -2.5}$$

$$x = 0 - 2$$

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

2dp 4)  $14x^2 + 3x = 11$

$$\begin{array}{ccc} 14x^2 + 3x - 11 & = & 0 \\ \underline{a} & \underline{b} & \underline{c} \end{array}$$

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

$$x = \frac{-3 \pm \sqrt{9 + 616}}{28} = \sqrt{625}$$

↓  
25

$$x = \frac{-3 + 25}{28}$$

$$x = \frac{-3 - 25}{28}$$

$$x = \frac{22}{28}$$

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

$$\boxed{x = 0.78}$$

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

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$$5. \quad 2x \quad 5x + 3y = 39 \quad (1)$$

$$3x \quad 8x - 2y = 42 \quad (2)$$

$$10x + 6y = 78 \quad (3)$$

$$+ \quad 24x - 6y = 126 \quad (4)$$

$$(2) + (3)$$

$$34x = 204$$

$$x = \frac{204}{34} = \boxed{x = 6}$$

Sub into

(1)

$$5(6) + 3y = 39$$

$$30 + 3y = 39$$

↘

$$3y = 39 - 30$$

$$3y = 9$$

$$\boxed{y = 3} \leftarrow y = \frac{9}{3}$$

$$6. \quad 5(2x^2 - y^2) - x^2(x^2 - y) - x^2y - x^4$$

$$10x^2 - 5y^2 - x^4 + \cancel{x^2y} - \cancel{x^2y} - x^4$$

$$10x^2 - 5y^2 - x^4 - x^4$$

$$10x^2 - 5y^2 - 2x^4$$

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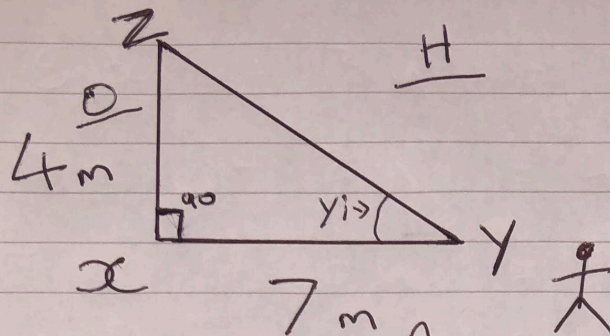
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7. i)

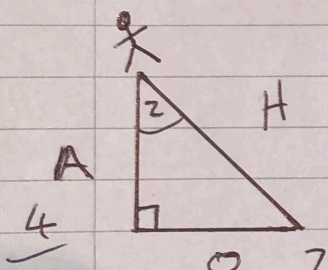
i) Angle y

$$\tan y = \frac{4}{7}$$

$$y = 0.5714$$

$$y = \tan^{-1}(0.5714)$$

$$y = 29.74^\circ$$

Angle z

$$\tan z = \frac{7}{4}$$

$$\tan z = 1.75$$

$$z = \tan^{-1}(1.75)$$

$$z = 60.26^\circ$$

$$180 - 60.26 - 29.74 = 90^\circ \checkmark$$

$$+ 90 = 180$$

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7. iii) Length  $YZ$ .

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

$$YZ^2 = 49 + 16$$

$$YZ^2 = 65 = \sqrt{65}$$

$$YZ = 8.0623$$

8 i)  $\sqrt[3]{x} = \sqrt[3]{x}$

ii)  $1 = x^0$