

1. i $x^4 \times x^6 \times x = \underline{x^{11}}$

ii $2x^2 \times 3x^3 \times 2x = 2x^3 \times 3x^3 = \underline{6x^6}$

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

iv $(3x^2)^3 = \underline{9x^5}$

v $\sqrt{x} \times \sqrt{x} = \underline{x}$

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

$$15x - 12x - 2 - 9 = 0$$

$$3x - 11 = 0, \rightarrow 3x = +11, \rightarrow x = \frac{11}{3} \text{ or } \underline{x = 3.66}$$

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

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

$$15x = 21 \rightarrow x = \frac{21}{15}, \underline{x = 1.40}$$

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

$$\frac{36(5x+3)}{4} = \frac{36(2x-1)}{9}$$

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

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

$$37x = -31 \rightarrow x = \frac{-31}{37}, \underline{x = -0.84}$$

3i $x^2 + 10x + 21 = 0$
 $(x+7)(x+3) = 0$
 $x = -7$, $x = -3$

ii $x^2 - 3x + 2 = 0$
 $(x-1)(x-2) = 0$
 $x = 1$, $x = 2$

iii $x^2 + 12x + 20 = 0$
 $(x+10)(x+2) = 0$
 $x = -10$, $x = -2$

iv ~~iii~~ $x^2 - 64 = 0$, $\sqrt{64} = 8$
 $(x+8)(x-8) = 0$
 $x = -8$, $x = 8$

v $2x^2 + 9x + 10 = 0$
 $(2x+5)(x+2) = 0$ (5 and 2 are multiples of 10, 2×2 makes 4, $5+4$ gives 9)
 $2x = -5$
 $x = -\frac{5}{2}$
 $x = -2.50$, $x = -2.00$

4. $14x^2 + 3x = 11$
 $14x^2 + 3x - 11 = 0$
$$x = \frac{-3 \pm \sqrt{(3)^2 - 4(14)(-11)}}{2(14)} = \frac{-3 \pm \sqrt{625}}{28} = \frac{-3 \pm 25}{28}$$

 $x = 0.79$, $x = -1.00$

$$\begin{aligned} 5. \quad 5x + 3y &= 39 \times^2 \rightarrow 10x + 6y = 78 \\ 8x - 2y &= 42 \times^3 \rightarrow 24x - 6y = 126 \\ \hline 34x &= 204 \end{aligned}$$

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

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

$$30 + 3y = 39$$

$$3y = 9$$

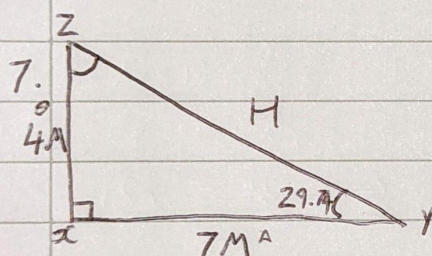
$$y = \frac{9}{3}, \quad \boxed{y = 3}$$

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

$$10x^2 - 5y^2 - x^4 + x^3y - x^2y - x^4$$

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

Written clearer $\rightarrow 10x^2 - 5y^2 - 2x^4$



$$i) \tan y = \frac{4}{7}, \quad \tan^{-1}\left(\frac{4}{7}\right) = 29.74^\circ, \quad \underline{\text{Angle } y = 29.74^\circ}$$

N

$$ii) \text{Angle } Z = 180 - (90 + 29.74) = 60.26, \quad \underline{\text{Angle } Z = 60.26^\circ}$$

$$iii) \quad YZ = \sin 29.74 = \frac{4}{YZ},$$

$$YZ = 4 \div \sin 29.74$$

$$\underline{YZ = 8.06 \text{ m}}$$

$$8i) \quad \sqrt[3]{x}, \text{ I'm gonna totally guess, as I am clueless lol } x^{-\frac{3}{3}} = \sqrt[3]{x}$$

$$3 \times \sqrt{x} = 3 \times \frac{x^1}{x^1} = 3x \quad 3 \times x^1 \div x^1 \quad x^1$$

$$ii) \quad \underline{x^0 = 1}$$