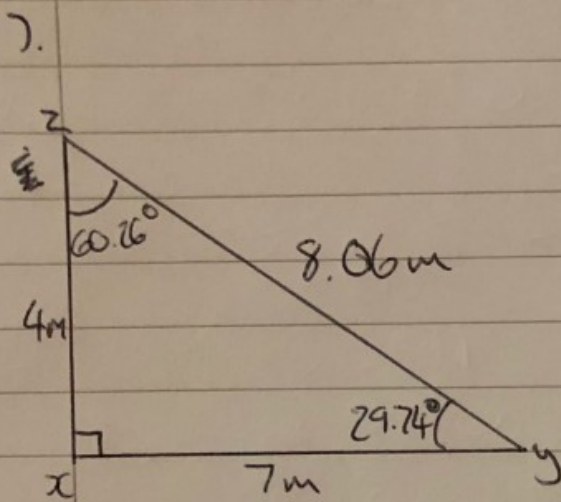




i. Angle Y $\text{opp} \propto \text{adj} = \text{Tan}$

$$\cancel{\text{Tan}} \text{ Tan } Y = \frac{4}{7}$$

$$\cancel{Y} Y = \text{Tan}^{-1} \frac{4}{7}$$

$$Y = 29.74^\circ$$

ii. Angle Z

$$Z = 180^\circ - 90^\circ - 29.74^\circ$$

$$Z = 60.26^\circ$$

iii. Length YZ

$$YZ^2 = xz^2 + xy^2$$

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

$$YZ^2 = 16 + 49$$

$$YZ^2 = 65$$

$$YZ = \sqrt{65}$$

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

$$YZ = \frac{4}{\cancel{\text{sin}} \text{ sin } 29.74}$$

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

8.

i. $\sqrt[3]{x} = \cancel{x^0} x^{1/3}$

ii $1 = x^0$

1.

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

ii. $2x^2 \times 3x^3 \times 2x$
 $= x^{2+3+1} = x^6$
 $= 2 \times 3 \times 2 = 12$
 $= 12x^6$

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

$= x^0 = 1$

iv. $(3x^2)^3$
 $3^3 = 27$
 $x^{2 \times 3} = x^6$
 $= 27x^6$

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

2.

i. $15x - 2 = 12x + 9$
 $15x - 12x = 9 + 2$
 $3x = 11$
 $x = \frac{11}{3}$

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

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

$21x - 6x = 18 + 3$

$15x = 21$

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

$x = \frac{7}{5}$

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

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

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

$45x + 27 = 8x - 4$

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

$37x = -31$

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

3.

i. $x^2 + 10x + 21 = 0$

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

$x = -7 \quad x = -3$

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

$(x-2)(x-1) = 0$

$x = 2 \quad x = 1$

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

$(x+10)(x+2) = 0$

$x = -10 \quad x = -2$

iv. $x^2 - 64 = 0$

$(x+8)(x-8) = 0$

$x = \pm 8$

V. $2x^2 + 9x + 10 = 0$
 $(2x + 5)(x + 2) = 0$
 $x = -\frac{5}{2} \quad x = -2$

4. $14x^2 + 3x = 11$
 $14x^2 + 3x - 11 = 0$
 $a = 14 \quad b = 3 \quad c = -11$

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

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

$$= \frac{-3 \pm \sqrt{625}}{28}$$

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

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

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

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

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

~~22/28~~

$$x = -1$$

$$x = 0.79$$

5

i.
$$\begin{aligned} 5x + 3y &= 39 \\ 8x - 2y &= 42 \end{aligned}$$

$$\begin{aligned} 2 \times (5x + 3y) &= 39 \times 2 \\ 3 \times (8x - 2y) &= 42 \times 3 \end{aligned}$$

$$\begin{aligned} 10x + 6y &= 78 \\ 24x - 6y &= 126 \end{aligned}$$

$$\begin{aligned} 34x &= 204 \\ x &= \frac{204}{34} \end{aligned}$$

$$x = 6$$

$$\begin{aligned} (5 \times 6) + 3y &= 39 \\ 30 + 3y &= 39 \\ 3y &= 39 - 30 \\ 3y &= 9 \\ y &= \frac{9}{3} \end{aligned}$$

$$y = 3$$

6.

i.
$$\begin{aligned} &5(2x^2 - y^2) - x^2(x^2 - y) - x^2y - x^4 \\ &= 10x^2 - 5y^2 - x^4 + x^2y - x^2y - x^4 \\ &= 10x^2 - 5y^2 - 2x^4 \end{aligned}$$