

Test Corrections

Solve in form $a\sqrt{b}$ $a, b \in \mathbb{N}$

$$x^2 - 2x - 4 = 0$$

$$\left. \begin{matrix} a=1 \\ b=-2 \\ c=-4 \end{matrix} \right\} x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$\frac{-(-2) \pm \sqrt{(-2)^2 - 4(1)(-4)}}{2(1)}$$

$$\oplus 1 + \sqrt{5} \text{ surd form } \ominus 1 - \sqrt{5}$$

b(i) $p = -3$ $q = -5$ $p+q$ and pq

$$\left. \begin{matrix} p+q \\ (-3) + (-5) \\ = -8 \end{matrix} \right\} \left. \begin{matrix} pq \\ (-3)(-5) \\ = +15 \end{matrix} \right\}$$

roots $p = -3$ $q = -5$

$$x = -3 \quad x = -5$$

$$+3 \mid x+3=0 \mid +3 \quad +5 \mid x+5=0 \mid +5$$

$$\begin{matrix} (x+3) \\ \downarrow \\ x(x+5) + 3(x+5) \end{matrix}$$

$$x^2 + 5x + 3x + 15 \Rightarrow x^2 + 8x + 15$$

Like terms

Q2) Factorize $x^2 + 7x - 30$

$$\begin{matrix} \wedge & \wedge \\ x & x & 10 & 3 \end{matrix}$$

$$(x + 10)(x - 3) \begin{matrix} -3x \\ +10x \\ +7x \end{matrix}$$

$$x^2 + 7x - 30 = 0$$

$$(x + 10)(x - 3) = 0$$

$$x + 10 = 0 \quad x - 3 = 0$$

$$-10 \mid x = -10 \mid -10 \quad +3 \mid x = 3 \mid +3$$

b) $2x^2 - 7x - 10 = 0$ Two decimal places.

$$\left. \begin{matrix} a=2 \\ b=-7 \\ c=-10 \end{matrix} \right\} \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$\frac{-(-7) \pm \sqrt{(-7)^2 - 4(2)(-10)}}{2(2)}$$

$$\oplus 4.589 \quad \ominus -1.089$$

$$4.59 \quad -1.09$$

Q3

i) $5x^3 - 10x^2$ HCF $5x^2 \Rightarrow 5xx$

$$\frac{5xxx - 10xx}{5xx \quad 5x} \quad 5x^2(x - 2x)$$

ii) $4x^2 - 81y^2$ D.O.T.S

$$\begin{matrix} \wedge & \wedge & \wedge \\ 2 & 2 & 9 & 9 & 3 & 3 \end{matrix}$$

$$(2x + 9y)(2x - 9y)$$

iii) $a^2 - ab + 3a - 3b$ - Grouping

$$a(a-b) + 3(a-b)$$

$$(a+3)(a-b)$$

Q4) Solve $x^2 - 5x - 6 = 0$

$$\begin{matrix} \wedge & \wedge \\ x & x & 6 & 1 \\ & & 2 & 3 \end{matrix}$$

$$\text{Factors: } (x - 6)(x + 1) = 0 \begin{matrix} +1x \\ -6x \\ -5x \end{matrix}$$

$$x - 6 = 0 \quad x + 1 = 0$$

$$+6 \mid x = +6 \mid +6 \quad \Rightarrow \mid x = -1 \mid -1$$

ii) Solve $8x^2 - 14x + 3 = 0$

$$\begin{matrix} \wedge & \wedge \\ 4 & 2 & 3 & 1 \\ 8 & 1 \end{matrix}$$

$$(4x - 1)(2x - 3) = 0 \begin{matrix} -12x \\ -2x \\ -14x \end{matrix}$$

$$4x - 1 = 0 \quad 2x - 3 = 0$$

$$\begin{matrix} +1 & +1 \\ \div 4 & \div 2 \end{matrix} \begin{matrix} 4x = 1 \\ x = 1/4 \end{matrix} \begin{matrix} +3 & +3 \\ \div 2 & \div 2 \end{matrix} \begin{matrix} 2x = 3 \\ x = 3/2 \end{matrix}$$

$$\cdot 25 \quad 1.5$$

iii) Dots $n^2 - 1$ $(n-1)(n+1)$

$$\begin{matrix} \wedge & \wedge \\ n & n & 1 & 1 \end{matrix}$$

b) $2x^2 - 7x - 6 = 0$

$$\left. \begin{matrix} a=2 \\ b=-7 \\ c=-6 \end{matrix} \right\} \frac{-(-7) \pm \sqrt{(-7)^2 - 4(2)(-6)}}{2(2)}$$

$$\oplus 4.21 \quad \ominus -0.71$$

H/W Read pg 167 / 168 Section 9.5
Pythagoras.