4. Solve the following equation for y, giving your answer in scientific notation (standard form).

$$\left(1.1\times10^{-16}\right)y-\left(1.2\times10^{10}\right)=\left(6.5\times10^{10}\right)$$ [4]

Transposed Equation

$$y = \frac{(\quad \times 10 \quad)+(\quad \times 10 \quad)}{(\quad \times 10 \quad)}$$

$$y = (\quad \times 10 \quad)$$

4. (a) Factorise completely

$$p^2 - pq - pr + qr$$ [3]

( ) ( )

(b) Solve for x

$$\frac{5x-7}{3}=\frac{x}{2}$$ [3]

Equation after Cross Multiplying

=

x =

4. The power, P watts, of the wind passing through a wind turbine with radius r metres and in a wind speed of s metres per second is given by

$$P=\frac{r^2s^3}{2}$$

Calculate the wind speed passing through a turbine with radius 25 metres producing power of 540 kW. [4]

Equation after Substituting

=

s =

4. Solve the following equations:

(a) $(2^x)(4^{x-1}) = 128$ [4]

Equation after Equalizing Bases

2 = 2

Equation of Equal Powers

LIVEWORKSHEETS

=

x =

(b) $64x^{-3} = 125$ [3]

Equation after Equalizing Powers

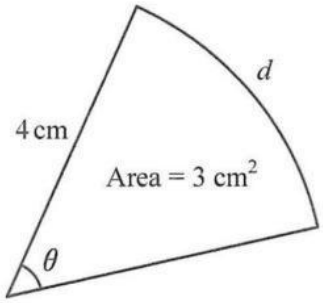
$$\left(\frac{}{}\right)^3 = \left(\quad\right)^3$$

Equation of Equal Bases

$$\frac{}{} =$$

x =

4.



NOT TO SCALE

The diagram above shows a sector of radius 4 cm and area 3 cm^2.

Using $\pi = 3.14$:

(a) Show that angle θ of the sector is equal to 21.5°. [3]

Area of Circle with radius 4 cm =

Fraction represented by area of Sector

$$\frac{}{}$$

Angle of Sector

$$\frac{}{} \times 360^\circ$$

$$\theta =$$

(b) Find arc length d. [2]

Circumference of Circle with radius 4 cm =

Arc of Sector =

LIVEWORKSHEETS

4. (a) Given $\begin{pmatrix} a & 3 \\ -2 & b \end{pmatrix}\begin{pmatrix} 5 \\ -2 \end{pmatrix} = \begin{pmatrix} 14 \\ -8 \end{pmatrix}$, find the values of a and b. [4]

Equation involving a

=

a =

Equation involving b

=

b =

(b) If $M = \begin{pmatrix} -3 & n \\ 9 & -12 \end{pmatrix}$ and M is singular (has no inverse), find the value of n. [3]

Value of The Determinant =

Determinant Equation

=

n =

4. The number of expected views of an influencer's content can be calculated using the formula $v = 1{,}000 + 3^d$ where v is the number of views and d is the number of days the content is published.

(a) Calculated the expected number of views after 7 days. [1]

(b) Determine how many days it will take for the expected number of views to reach 60,049. [3]

Expected Views Equation

= 60,049

d =

LIVEWORKSHEETS