

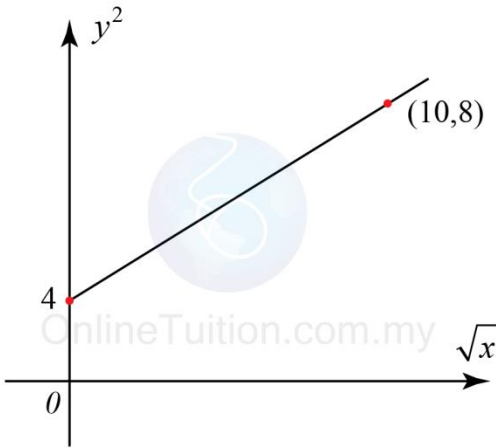
Linear Law Practice 2



1. Reduce non-linear relation, $y = px^{n-1}$, where k and n are constants, to linear equation. State the gradient and vertical intercept for the linear equation obtained.

$$[m=n-1, c = \log_{10} p]$$

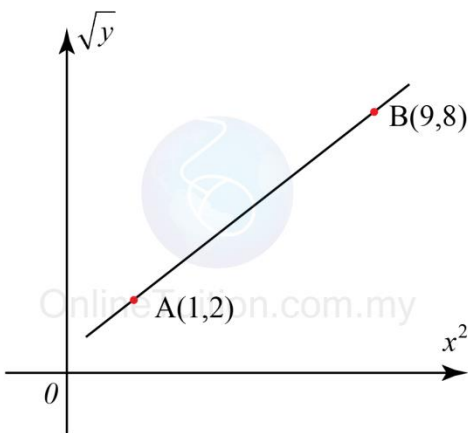
2. The diagram shows a line of best fit by plotting a graph of y^2 against \sqrt{x} .



- a. Find the equation of the line of best fit.
 b. Determine the value of
 i. x when $y = 4$,
 ii. y when $x = 25$.

$$\left[(a) y^2 = \frac{2}{5}\sqrt{x} + 4; (b)(i) 900; (b)(ii) \pm\sqrt{6} \right]$$

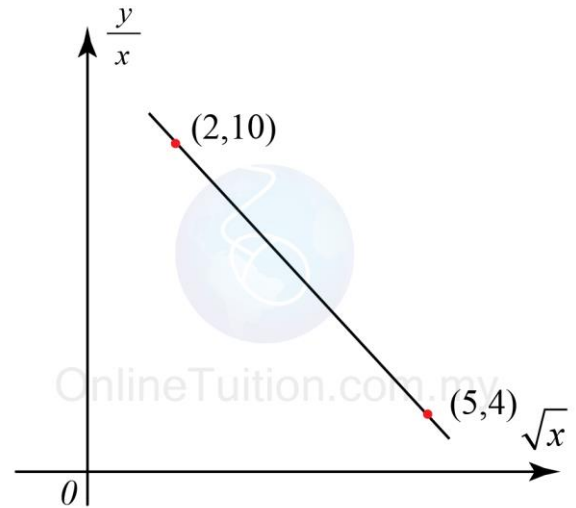
3. The diagram shows part of the straight line graph obtained by plotting \sqrt{y} against x^2 .



Express y in terms of x .

$$\left[y = \left(\frac{3}{4}x^2 + \frac{5}{4} \right)^2 \right]$$

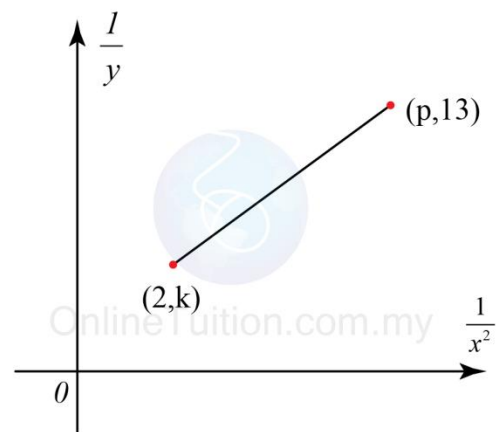
4. The diagram shows part of the straight line graph obtained by plotting $\frac{y}{x}$ against \sqrt{x} .



Given its original non-linear equation is $y = px + qx^{\frac{3}{2}}$. Calculate the values of p and q .

$$[p = 14, q = -2]$$

5. The diagram shows the graph of the straight line that is related by the equation $\frac{x}{y} = \frac{2}{x} + 3x$.



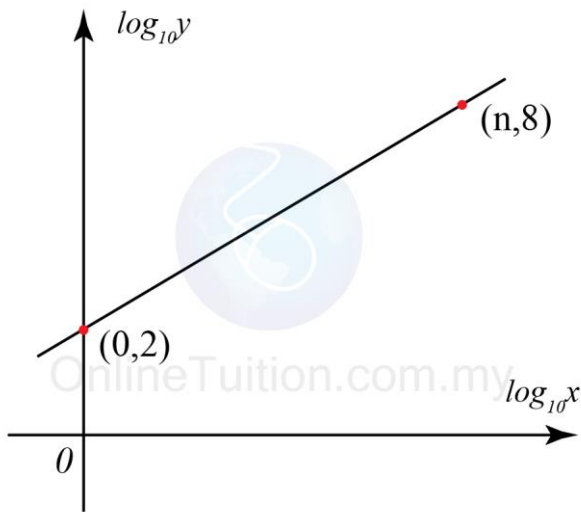
Find the values of p and k .

$$[p = 5, k = 7]$$

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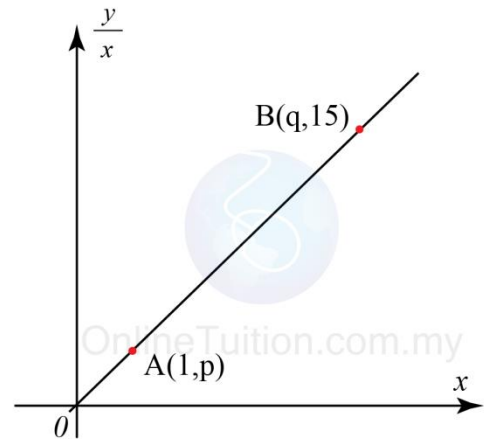
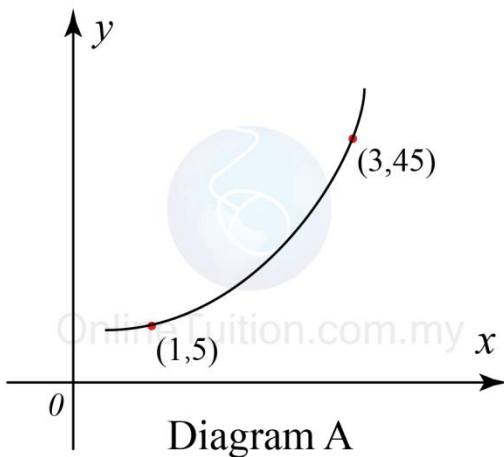


6. The variables x and y are related by the equation $y = px^3$, where p is a constant. Find the value of p and n .



[$p=1000$. $n = \frac{5}{3}$]

7. Diagram A shows part of the curve $y = ax^2 + bx$.
Diagram B shows part of the straight line obtained when the equation is reduced to the linear form.



(Diagram B)

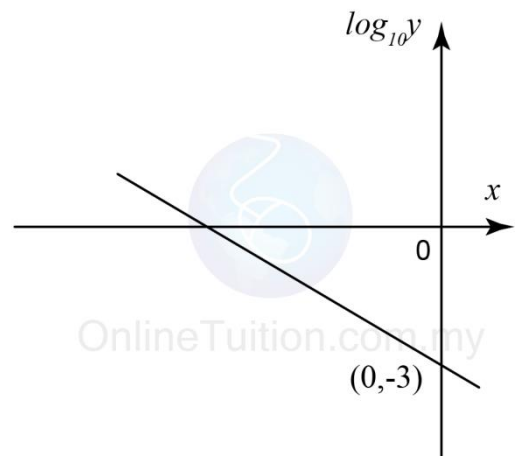
Find

- (a) the values of a and b ,
(b) the values of p and q .

[(a) $a=5$, $b=0$ (b) $p=5$, $q=3$]

8. The variables x and y are related by the equation $y = \frac{p}{3^x}$, where k is a constant.

Diagram 6 shows the straight line graph obtained by plotting $\log_{10} y$ against x .



- (a) Express the equation $y = \frac{p}{3^x}$ in its linear form used to obtain the straight line graph shown in Diagram 6.
(b) Find the value of p .

[(a) $\log_{10} p = -\log_{10} 3(x) + \log_{10} p$, (b) $p = \frac{1}{1000}$]

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9. Variable x and y are related by the equation

$$y^2 = px^q .$$
 When the graph $\lg y$ against $\lg x$ is

drawn, the resulting straight line has a gradient of -2 and an vertical intercept of 0.5 . Calculate the value of p and of q .

$$[p=10, q=-4]$$

10. Variable x and y are related by the equation

$$y = \frac{c}{d-x} .$$
 When the graph y against xy is drawn the

resulting line has gradient 0.25 and an intercept on the y -axis of 1.25 . Calculate the value of c and of d .

$$[c=5, d=4]$$