

29th September



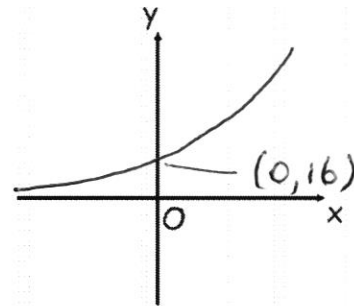
Corbettmaths

Factorise fully $27y^2 - 75x^2$

$$\begin{aligned}
 &= 3[9y^2 - 25x^2] \\
 &= 3[(3y)^2 - (5x)^2] \\
 &= \underline{3(3y + 5x)(3y - 5x)}
 \end{aligned}$$

Sketch the graph of $y = 16 \times \left(\frac{1}{2}\right)^{-x}$
 $= 16 \times 2^x$

Label the coordinates of any points of intersection with the coordinate axes.

The function $f(x)$ is defined as

$$\begin{aligned}
 f(x) &= 14 - 3x \\
 p &\leq x < 8
 \end{aligned}$$

The range of $f(x)$ is
 $-10 \leq f(x) \leq 30.5$

Work out the value of p

$$\begin{aligned}
 14 - 3x &= 30.5 \\
 -16.5 &= 3x \\
 -5.5 &= x \\
 p &= \underline{-5.5}
 \end{aligned}$$

The curve C has equation

$$y = \frac{1}{2}x^4 - 3x^2$$

The point P on the curve C has x-coordinate 2.

The tangent at P meets the x-axis at the point $(k, 0)$

Find the value of k

$$\begin{aligned}
 \frac{dy}{dx} &= 2x^3 - 6x \\
 \text{At P } \frac{dy}{dx} &= 4, \quad y = -4 \\
 \text{Tgt is } y + 4 &= 4(x - 2) \\
 (k, 0) \quad 4 &= 4(k - 2) \\
 \Rightarrow 1 &= k - 2 \\
 \Rightarrow k &= \underline{3}
 \end{aligned}$$