

Differentiation

Finding gradient:

A series of 15 thin, light gray horizontal lines stacked vertically, providing a space for writing the student's answer. The lines are evenly spaced and extend across most of the page width.

Exercise:

For each of these functions of x , find the gradient function.

(i) $y = x^5$

(ii) $z = 7x^6$

(iii) $p = 11$

(iv) $f(x) = \frac{3}{x}$

Differentiate $y = 3x^2 + 4x^3$.

Differentiate $f(x) = \frac{(x^2 + 1)(x - 5)}{x}$

Differentiation in context:

Given that $y = \sqrt{x} - \frac{8}{x^2}$, find

- (i) $\frac{dy}{dx}$
- (ii) the gradient of the curve at the point $(4, 1\frac{1}{2})$.

Figure 5.10 shows the graph of

$$y = x^2(x - 6) = x^3 - 6x^2.$$

Find the gradient of the curve at the points A and B where it meets the x axis.

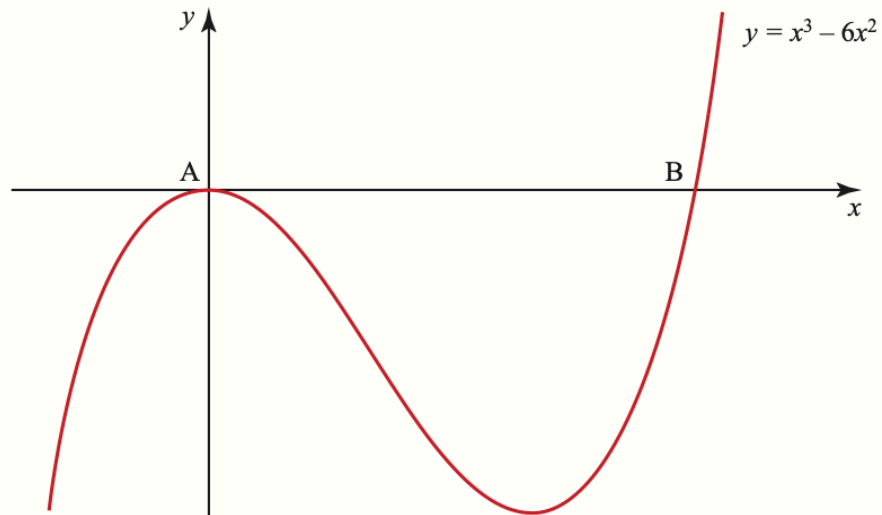


Figure 5.10

Find the points on the curve with equation $y = x^3 + 6x^2 + 5$ where the value of the gradient is -9 .