

Introduction to Calculus

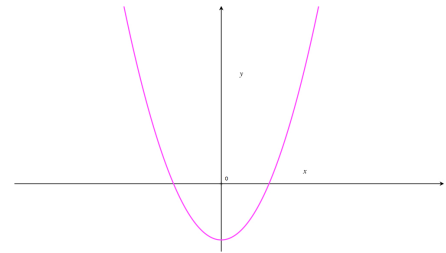
Gradients of Curves - Power Rule for Differentiation

Worksheet 3

Exercise 1

Given the curve $y = x^2 - 4$

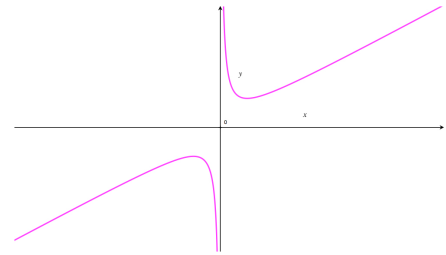
1. Find an expression for $\frac{dy}{dx}$.
2. Calculate the gradient of the curve at the point $A(-3, 5)$.
3. Calculate the gradient of the curve at the point $B(1, -3)$.



Exercise 2

Given the curve $y = x + \frac{1}{x}$

1. State this function's domain.
2. Find an expression for $\frac{dy}{dx}$.
3. Calculate the gradient of the curve at the point along its length with x -coordinate, $x = -1$.

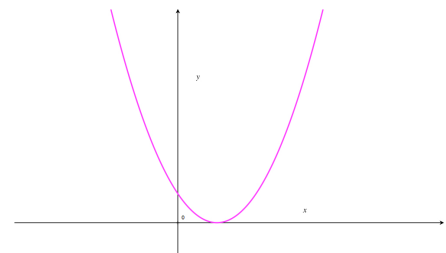


Exercise 3

Given the curve defined by:

$$y = 2x^2 - 4x + 2$$

1. Find an expression for $\frac{dy}{dx}$.
2. Calculate the y -coordinate of the point along its length with x -coordinate $x = 3$, call this point P .
3. Calculate the gradient of the curve at point P .



Exercise 4

Given the curve defined by:

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

1. Find an expression for $\frac{dy}{dx}$.
2. Calculate the gradient of the curve at the point along its length with x -coordinate $x = -1$.
3. Calculate the gradient of the curve at the point along its length with x -coordinate $x = 2$.

