

Section 3: Extending the rule

Section test

1. The derivative of $\sqrt[4]{x}$ is

(a) $\frac{1}{4}x^{-\frac{3}{4}}$

(b) $\frac{1}{4}x^{-\frac{1}{4}}$

(c) $-4x^{-5}$

(d) $-4x^{-3}$

2. The derivative of $\frac{1}{x^5}$ is

(a) $-\frac{5}{x^4}$

(b) $-\frac{5}{x^6}$

(c) $\frac{5}{x^4}$

(d) $\frac{1}{5x^4}$

3. Find the gradient of the curve $y = \frac{2}{\sqrt{x}}$ at the point (4, 1).

4. Find the gradient of the curve $y = \frac{2}{x} - \frac{3}{x^2}$ at the point $(2, \frac{1}{4})$.

5. What is the x -coordinate of the point on the curve $y = \frac{1}{x} - \frac{1}{x^2}$ where the gradient is 0?

6. What are the coordinates of the point on the curve $y = \sqrt{x}$ where the gradient is 2?

7. Find the equation of the tangent to the curve $y = 2x - \frac{1}{x}$ at the point where $x = 1$.

8. Find the equation of the normal to the curve $y = 2x - \sqrt{x}$ at the point where $x = 4$.

9. Find the coordinates of the stationary point of the curve $y = x^2 - \frac{2}{x}$ and state whether it is a maximum or a minimum point.

10. Find the coordinates of the stationary point of the curve $y = x - 4\sqrt{x}$ and state whether it is a maximum or a minimum point.