

Pure mathematics assessment

Topic: Differentiation

Name:

Date:

1. Differentiate $y = x^3$. [1]
2. Differentiate $y = x$. [1]
3. Differentiate $y = 2x^4$. [1]
4. Differentiate $y = 2x^3 - 2x^2 + 1$ [2]
5. Differentiate $y = (3x^2 + x)^2$. [3]
6. Differentiate $y = x^{-3}$. [2]
7. Differentiate $y = \frac{1}{2x^4}$. [2]
8. Differentiate $y = \frac{\sqrt[3]{x^5}}{5} + \frac{9}{x^2}$. [3]
9. Given that $y = 5x^2 + 3x - 3$, find x if $\frac{dy}{dx} = 7$. [5]
10. Find the equation of the tangent to the curve $y = x^2 - 4$ at the point $(2, 0)$. [5]
11. Find the equation of the normal to the curve $y = 3 - x^2$ where the x-coordinate is 0. [5]

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