



Mathematics Department
2020/2021

Name:

The Product and Quotient Rule

Date

Q1: Find the derivative of: $f(x) = (x^2 + 5)(x^3 - 1)$

a) $f'(x) = (2x)(3x^2)$	b) $f'(x) = (2x) + (3x^2)$
c) $f'(x) = (2x)(x^3 - 1) + (3x^2)(x^2 + 5)$	d) $f'(x) = (2x)(x^3 - 1) - (3x^2)(x^2 + 5)$

Q2: Find the equation of tangent of

$$f(x) = \frac{x+1}{x+2}, \text{ at } x = 0$$

a) $y = \frac{1}{2}x + \frac{1}{4}$	b) $y = \frac{1}{4}x + \frac{1}{2}$
c) $y = \frac{1}{2}x - \frac{1}{4}$	d) $y = \frac{1}{4}x - \frac{1}{2}$

Q3: Let

$$f(2) = 5, \quad f'(2) = -1,$$

$$\left(\frac{3}{f}\right)'(2) =$$

a) $\frac{3}{25}$	b) $\frac{-3}{25}$	c) $\frac{3}{5}$	d) $\frac{-3}{5}$
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Q4: - Suppose the price of an object is **\$20** and **20,000** units are sold. If the price increases at a rate of **\$1.25** per year and the quantity sold increases at a rate of **2000** per year, at what rate will revenue increase?