

3.1. Definition of Derivative

Supplemental Problems

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13, 14, 15, 16, 22*3.3. Power Rule*Section 3.3 Exercises, pg. 126
 $1^1, 3^1, 5^1, 7, 9, 11, 29^{1/2}, 30^{1/2}$ *3.3. Irrational and Rational Powers*

Supplemental Problems

3, 4, 5³*3.1. Numerical Differentiation*Section 3.1 Exercises, pg. 107
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 $17^4, 21^4, 25^4$ *3.1. Endpoint Derivatives*Section 3.1 Exercises, pg. 107
31, 32*3.2. Differentiability*Section 3.1 Exercises, pg. 107
26Section 3.2 Exercises, pg. 116
5, 7, 9, 31, 33, 35**Notes:****1.** Notation:

$$\frac{dy}{dx} \equiv f'(x)$$

2. Express your answers using positive exponents.**3.** Draw your graph on the grid provided.**4.** Use

$$h = \Delta x = x_2 - x_1$$

and

$$f'\left(x_1 + \frac{\Delta x}{2}\right) \approx \frac{f(x_2) - f(x_1)}{\Delta x}.$$

Supplemental Problems:For problems **1** and **2** calculate the slope of the secant $m_S(x, h)$ and the slope of the tangent $m_T(x)$ using

$$m_S(x, h) = \frac{f(x + h) - f(x)}{h}$$

and

$$m_T(x) = \lim_{h \rightarrow 0} m_S(x, h).$$

1)

$$f(x) = x^5$$

2)

$$f(x) = \frac{1}{x^3}$$

For problems **3** and **4** calculate $f'(x)$.**3)**

$$f(x) = 7 \cdot \sqrt[4]{x^3} - \frac{3}{\sqrt[5]{x^4}}$$

4)

$$f(x) = 11 \cdot \sqrt[3]{x^7} - \frac{2}{\sqrt[5]{x^9}}$$

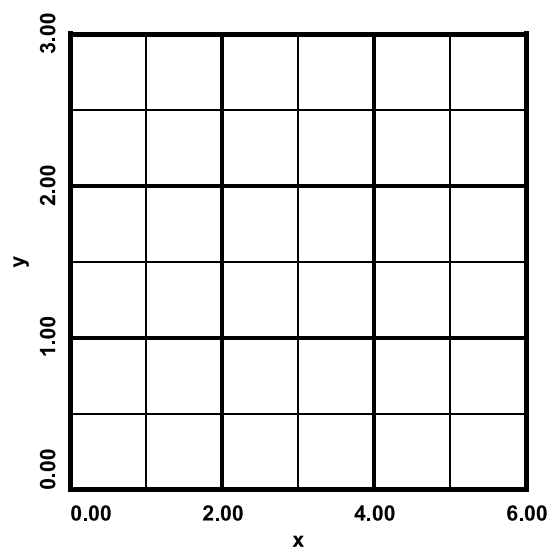
5) For

$$f(x) = x^{\frac{1}{e}}$$

- a) Find the equation of the line tangent to $y = f(x)$ at $x = 2$.
- b) Graph $y = f(x)$ and the tangent line on the grid provided.

Grids:

5)



30)

