

Exercícios Derivada usando regras

① $y = 0$ constante $\checkmark$ $f'(x) = 0$ ② $y = 10$ constante $\checkmark$ $f'(x) = 0$

③ $y = -8$ constante $\rightarrow f'(x) = 0$

④ $y = \frac{1}{2}$ constante $\rightarrow f'(x) = 0$

⑤ $y = 0,8$ constante $\rightarrow f'(x) = 0$

⑥ $y = \sqrt{3}$ constante $\rightarrow f'(x) = 0$

⑦ $y = \frac{\sqrt{2}}{2}$ constante $\rightarrow f'(x) = 0$

⑧ $y = 2x = f(x) = 2x^1 \rightarrow f'(x) = 2(1 \cdot x^0) = 2$

⑨ $y = 5x = f(x) = 5x^1 \rightarrow f'(x) = 5(1 \cdot x^0) = 5$

⑩ $y = -\frac{1}{2}x = f(x) = -\frac{1}{2}x^1 \rightarrow f'(x) = -\frac{1}{2}(1 \cdot x^0) = -\frac{1}{2}$

⑪ $y = \frac{x}{4} = f(x) = \frac{1}{4}x^1 \rightarrow f'(x) = \frac{1}{4}$

⑫ $y = \frac{3x}{2} = f(x) = \frac{3}{2}x^1 \rightarrow f'(x) = \frac{3}{2}$

⑬ $y = 15x = f(x) = 15x^1 \rightarrow f'(x) = 15$

⑭ $y = 0,8x = f(x) = 0,8x^1 \rightarrow f'(x) = 0,8$

$$(15) y = 0,1x = f(x) = -0,1x' \rightarrow f'(x) = -0,1$$

$$(16) y = \frac{x}{35} = f(x) = \frac{1}{35}x^1 \rightarrow f'(x) = \frac{1}{35}$$

$$(17) y = 2x + 4 \Rightarrow y'_1 = 2 \quad y'_2 = \phi \rightarrow y' = 2 + \phi = 2$$

$$(18) y = \frac{x}{2} + 0,5 = \frac{x}{2} + \frac{1}{2} = \frac{x}{2} \rightarrow y' = \frac{1}{2} \cdot x' = \frac{1}{2}$$

$$(19) y = 0,1x - \frac{1}{2} \Rightarrow y'_1 = 0,1 \quad y'_2 = \phi \Rightarrow y' = y'_1 + y'_2 = 0,1 - \phi = 0,1$$

$$(20) y = \frac{-3x}{4} + \frac{1}{5} \Rightarrow y'_1 = \frac{-3}{4} \quad y'_2 = \phi \Rightarrow y' = \frac{-3}{4} + \phi = \frac{-3}{4}$$

$$(21) y = x^2 \Rightarrow y' = 2x^1 \Rightarrow y' = 2x$$

$$(22) y = 2x^2 + 6x + 1 \Rightarrow y'_1 = 4x \quad y'_2 = 6 \quad y'_3 = \phi \Rightarrow y' = 4x + 6$$

$$(23) y = 3x^2 + 4 \Rightarrow y'_1 = 3 \cdot 2 \cdot x = 6x \quad y'_2 = \phi \Rightarrow y' = 6x + \phi = 6x$$

$$(24) y = 0,5x^2 - 12x \Rightarrow y'_1 = 0,5 \cdot 2 \cdot x = x \quad y'_2 = 12 \Rightarrow y' = x - 12$$

$$(25) y = \frac{3x^2}{5} - \frac{x}{4} - 1 \Rightarrow y'_1 = \frac{3 \cdot 2 \cdot x}{5} = \frac{6x}{5} \quad y'_2 = \frac{1}{4} \quad y'_3 = \phi$$

$$y' = \frac{6x}{5} - \frac{1}{4} - \phi = \frac{6x}{5} - \frac{1}{4}$$

$$(26) y = 2,1x^2 - x - \frac{3}{4} \Rightarrow y'_1 = 2,1 \cdot 2 \cdot x = 4,2x \quad y'_2 = 1 \cdot x^0 = 1$$

$$y'_3 = \phi \Rightarrow y' = 4,2x - 1 - \phi = 4,2x - 1$$

$$(27) y = 1 - 2x - 0,8x^2 \quad y'_1 = 0 \quad y'_2 = 2 \quad y'_3 = 0,8 \cdot 2 \cdot x = 1,6x$$

$$y' = 0 - 2 - 1,6x = -2 - 1,6x$$

$$(28) y = x^2 - 6x + 1 \Rightarrow y'_1 = 2x \quad y'_2 = 6 \quad y'_3 = 0 \Rightarrow y' = 2x - 6$$

$$(29) y = \frac{x^2 + 3}{2} = \frac{x^2}{2} + 3 \Rightarrow y'_1 = \frac{1}{2} \cdot 2 \cdot x = x \quad y'_2 = 0 \Rightarrow y' = x$$

$$(30) y = x^3 \Rightarrow y' = 3 \cdot x^{3-1} = 3x^2$$

$$(31) y = x^4 \Rightarrow y' = 4x^{4-1} = 4x^3$$

$$(32) y = x^{10} \Rightarrow y' = 10x^9$$

$$(33) y = x^{20} \Rightarrow y' = 20x^{19}$$

$$(34) y = x^{100} \Rightarrow y' = 100x^{99}$$

$$(35) y = 2x^5 \Rightarrow y' = 2 \cdot 5 \cdot x^{5-1} = 10x^4$$

$$(36) y = 3x^8 \Rightarrow y' = 3 \cdot 8 \cdot x^{8-1} = 24x^7$$

$$(37) y = 4x^3 \Rightarrow y' = 4 \cdot 3 \cdot x^{3-1} = 12x^2$$

$$(38) y = 0,1x^{10} \Rightarrow y' = 0,1 \cdot 10 \cdot x^{10-1} = 1x^9 = x^9$$

$$(39) y = -0,3x^3 \Rightarrow y' = -0,3 \cdot 3 \cdot x^{3-1} = -0,9x^2$$

$$(40) y = \frac{-3}{4}x^{20} \Rightarrow y' = \frac{-3}{4} \cdot 20 \cdot x^{20-1} = \frac{-60}{4} \cdot x^{19} = -15x^{19}$$

$$(41) y = \frac{8}{15}x^5 \Rightarrow y' = \frac{8}{15} \cdot 5 \cdot x^{5-1} = \frac{40}{15}x^4 = \frac{8}{3}x^4$$

$$(42) \quad y = \frac{3}{2} x^6 \Rightarrow y' = \frac{3}{2} \cdot 6 \cdot x^{6-1} = \frac{18}{2} x^5 = 9x^5$$

$$(43) \quad y = \frac{x^{10}}{10} = \frac{1}{10} \cdot x^{10} \Rightarrow y' = \frac{1}{10} \cdot 10 \cdot x^{10-1} = \frac{10}{10} \cdot x^9 = x^9$$

$$(44) \quad y = \frac{x^5}{5} = \frac{1}{5} x^5 \Rightarrow y' = \frac{1}{5} \cdot 5 \cdot x^{5-1} = \frac{5}{5} \cdot x^4 = x^4$$

$$(45) \quad y = \frac{x^{100}}{100} = \frac{1}{100} \cdot x^{100} \Rightarrow y' = \frac{1}{100} \cdot 100 \cdot x^{100-1} = \frac{100}{100} \cdot x^{99} = x^{99}$$

$$(1) \quad y = \sqrt{x}, x \geq 0;$$

Exemples

$$y = \sqrt[2]{x^2} = x^{\frac{1}{2}} \Rightarrow y' = \frac{1}{2} \cdot x^{\frac{1}{2}-1} = \frac{1}{2} x^{-\frac{1}{2}}$$

$$(2) \quad y = \sqrt[3]{x}, x \in \mathbb{R}; \Rightarrow y = x^{\frac{1}{3}} \Rightarrow y' = \frac{1}{3} \cdot x^{-\frac{2}{3}}$$

$$(3) \quad y = \sqrt[4]{x}, x \geq 0; \Rightarrow y = x^{\frac{1}{4}} \Rightarrow y' = \frac{1}{4} \cdot x^{\frac{1}{4}-1} = \frac{1}{4} x^{-\frac{3}{4}}$$

$$(4) \quad y = \sqrt[5]{x}, x \in \mathbb{R}; \Rightarrow y = x^{\frac{1}{5}} \Rightarrow y' = \frac{1}{5} \cdot x^{\frac{1}{5}-1} = \frac{1}{5} x^{-\frac{4}{5}}$$