Boletín Derivadas 1

1) $f(x) = \log_7 (x^2 - x)$

$$f'(x) = \frac{2x-1}{(x^2-x)\ln 7}$$

2) $\log_3 (2x^2 - 3x + 2)$

$$f'(x) = \frac{4x-3}{(2x^2-3x+2)\ln 3}$$

3) $f(x) = \ln(x - 2x^2)$

$$f'(x) = \frac{1 - 4x}{x - 2x^2}$$

4) $f(x) = \log_a(x^k)$

$$y' = \frac{k \cdot x^{k-1}}{x^k \cdot \ln a}$$

5) $f(x) = \frac{1}{x+1} = (x+1)^{-1}$

$$f'(x) = \frac{-1}{(x+1)^2}$$

6) $f(x) = \sqrt[5]{x^2} = x^{2/5}$

$$f'(x) = \frac{2}{5} x^{-3/5}$$

$$f'(x) = \frac{2x}{5 \cdot \sqrt[5]{(x^2)^4}} = \frac{2}{5} \cdot x^{5/5} \cdot x^{-8/5} = \frac{2}{5} \cdot x^{-3/5}$$

7) $f(x) = \frac{1}{\sqrt[3]{2}}$

$f'(x) = 0$

8) $f(x) = \frac{1}{\sqrt[4]{7x^2}} = \frac{1}{\sqrt[4]{7} \cdot \sqrt[4]{x^2}}$

$\frac{1}{\sqrt[4]{7}} \cdot \frac{1}{\sqrt[4]{x^2}} = \frac{1}{\sqrt[4]{7}} \cdot \frac{1}{x^{1/2}} = \frac{1}{\sqrt[4]{7}} \cdot x^{-1/2}$

$f'(x) = \frac{1}{\sqrt[4]{7}} \cdot -\frac{1}{2} x^{-3/2}$

9) $f(x)=\sqrt{x^2-4x-2}$

$f'(x)\dfrac{2x-4}{2\sqrt{x^2-4x-2}}=$

$=\dfrac{x-2}{\sqrt{x^2-4x-2}}$

10) $f(x)=\sqrt[3]{2-4x-x^2}=(2-4x-x^2)^{1/3}$

$f'(x)=\dfrac{-4-2x}{3\cdot\sqrt[3]{(2-4x-x^2)^2}}$

11) $f(x) = (3x^4 - 2x + 1)^7$

$f'(x) = 7(3x^4 - 2x + 1)^6 \cdot (12x^3 - 2)$

12) $f(x) = (3x - x^3)^5 - (x^2 - 5)^6$

$f'(x) = 5(3x - x^3)^4 \cdot (3 - 3x^2) - 6(x^2 - 5)^5 \cdot (2x)$

(13) $f(x) = \sqrt{x+1} - \sqrt{x-1}$

$$f'(x) = \frac{1}{2\sqrt{x+1}} - \frac{1}{2\sqrt{x-1}}$$

(14) $f(x) = (\ln x + \sqrt{x})^3$

$$f'(x) = 3(\ln x + \sqrt{x})^2 \cdot \left(\frac{1}{x} + \frac{1}{2\sqrt{x}}\right)$$

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

$f'(x) = 5^x \cdot \ln 5$

(16) $f(x) = \left(\frac{2}{3}\right)^x$

$f'(x) = \left(\frac{2}{3}\right)^x \cdot \ln \frac{2}{3}$

(17) $f(x) = \frac{2^x}{3}$ $f(x) = \left(\frac{2}{3}\right)^x$

$f'(x) = \frac{2^x \cdot \ln 2}{3}$

(18) $f(x) = e^{2x^2+x}$

$f'(x) = (4x+1) \cdot e^{2x^2+x}$

Deberes: 21, 22, 79, 80

(19) $f(x) = 5^{1-x}$

$f'(x) = -5^{1-x} \cdot \ln 5$

$= 5^{1-x} \cdot \ln 5 \cdot (-1)$

(20) $f(x) = e^{2x}$

$f'(x) = 2 \cdot e^{2x}$