



**Nombre de alumno: Ruano Navas
Karla Priscila**

**Nombre del profesor: Jorge Enrique
Albores**

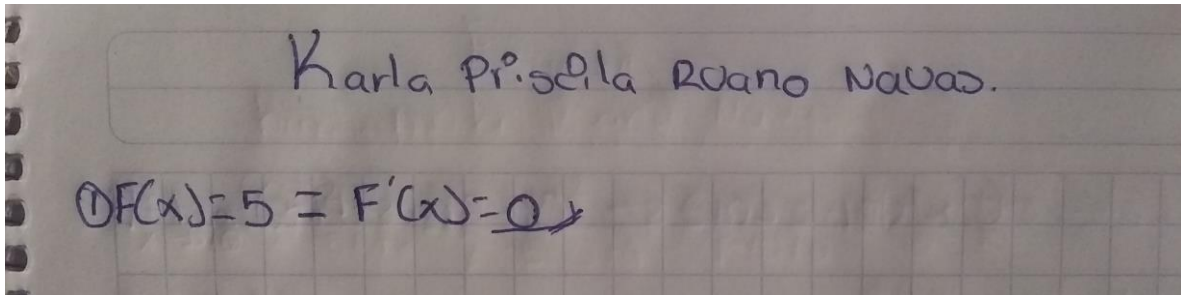
Nombre del trabajo: Ejercicios

Materia: Calculo

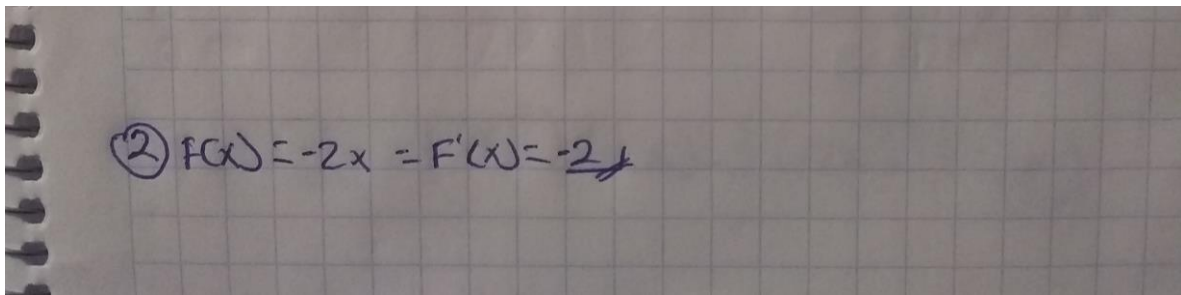
Grado: 4 Semestre

Grupo: "A"

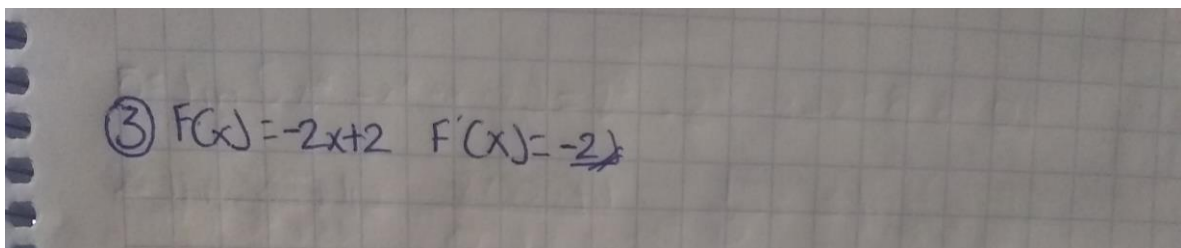
$$f(x) = 5$$



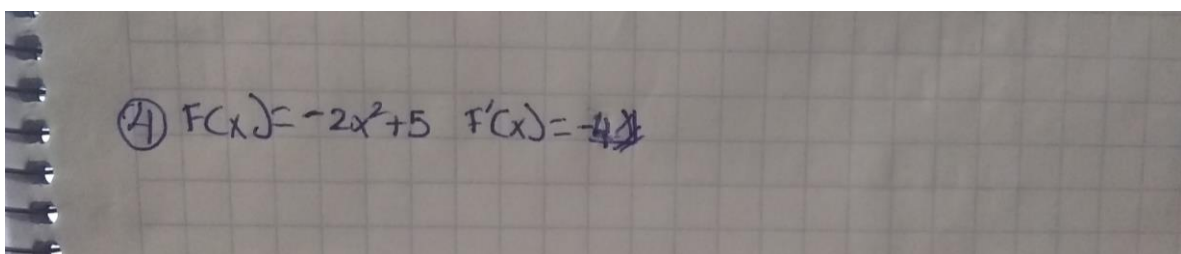
$$f(x) = -2x$$



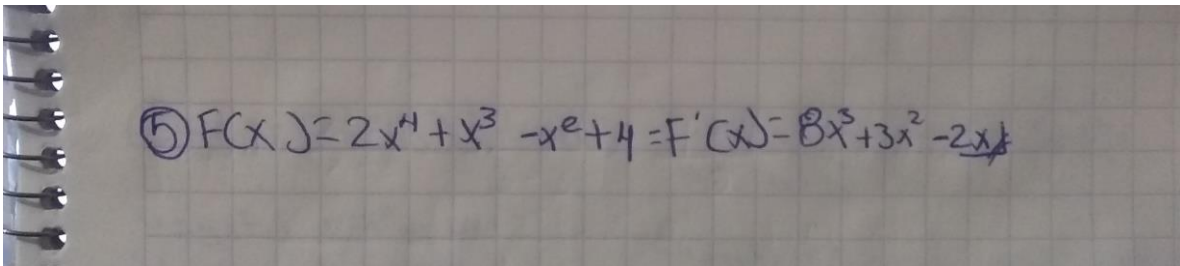
$$f(x) = -2x + 2$$



$$f(x) = -2x^2 - 5$$

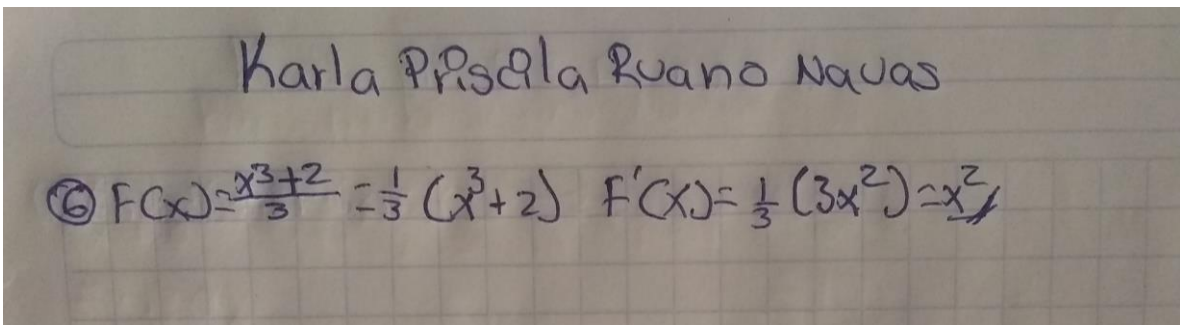


$$f(x) = 2x^4 + x^3 - x^2 + 4$$



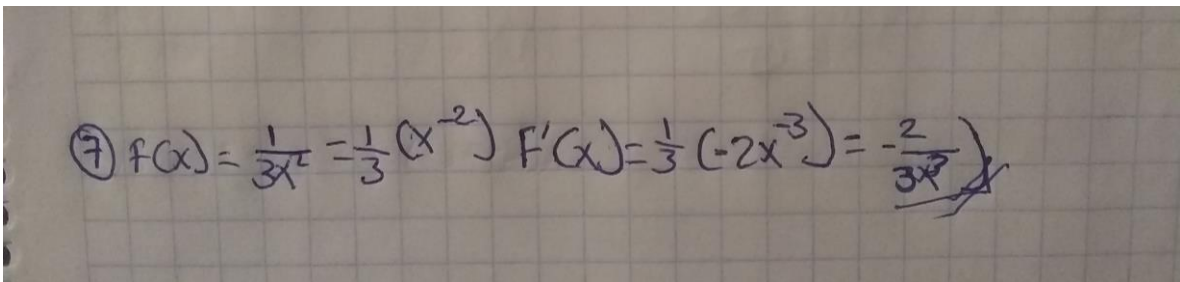
Handwritten work on a grid background showing the derivative of the function $f(x) = 2x^4 + x^3 - x^2 + 4$. The student has written: $(5) f(x) = 2x^4 + x^3 - x^2 + 4 = f'(x) = 8x^3 + 3x^2 - 2x$. The original function is written in a smaller, lighter script above the derivative.

$$f(x) = \frac{x^3 + 2}{3}$$



Handwritten work on a grid background. At the top, the name "Karla Priscila Ruano Navas" is written. Below it, the student has written: $(6) f(x) = \frac{x^3 + 2}{3} = \frac{1}{3}(x^3 + 2) \quad f'(x) = \frac{1}{3}(3x^2) = x^2$. The original function is written in a smaller, lighter script above the derivative.

$$f(x) = \frac{1}{3x^2}$$



Handwritten work on a grid background showing the derivative of the function $f(x) = \frac{1}{3x^2}$. The student has written: $(7) f(x) = \frac{1}{3x^2} = \frac{1}{3}(x^{-2}) \quad f'(x) = \frac{1}{3}(-2x^{-3}) = \frac{-2}{3x^3}$. The original function is written in a smaller, lighter script above the derivative.

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

$$\textcircled{8} f(x) = \frac{x+1}{x-1} = f'(x) = \frac{1(x-1) - (x+1)}{(x-1)^2} = \frac{x-1-x-1}{(x-1)^2} = \frac{-2}{(x-1)^2}$$

$$u = x+1 \quad v = x-1$$

$$u' = 1 \quad v' = 1$$

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

$$\textcircled{9} f(x) = (5x^2 - 3)(x^2 + x + 4)$$

$$u = 5x^2 - 3 \quad v = x^2 + x + 4$$

$$u' = 10x \quad v' = 2x + 1$$

$$f'(x) = (5x^2 - 3)(2x + 1) + (x^2 + x + 4)10x =$$

$$10x^3 + 5x^2 - 6x - 3 + 10x^3 + 10x^2 + 40x =$$

$$20x^3 + 15x^2 + 34x - 3$$

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

$$\textcircled{10} f(x) = \frac{5}{x^5} = 5x^{-5} \quad f'(x) = -25x^{-6} = -\frac{25}{x^6}$$

$$f(x) = \frac{5}{x^5} + \frac{3}{x^2}$$

$$\textcircled{11} f(x) = \frac{5}{x^5} + \frac{3}{x^2} = 5(x^{-5}) + 3(x^{-2}) \quad f'(x) = \frac{-25}{x^6} - \frac{6}{x^3}$$

$$f(x) = \sqrt{x}$$

$$\textcircled{12} f(x) = \sqrt{x} = x^{1/2} \quad f'(x) = \frac{1}{2}x^{-1/2} = \frac{1}{2\sqrt{x}}$$

$$f(x) = \frac{1}{\sqrt{x}}$$

$$\textcircled{13} f(x) = \frac{1}{\sqrt{x}} = x^{-1/2} \quad f'(x) = -\frac{1}{2}x^{-3/2} = \frac{-1}{2x\sqrt{x}}$$

$$f(x) = \frac{1}{x \cdot \sqrt{x}}$$

$$\textcircled{14} f(x) = \frac{1}{\sqrt[3]{x}} = \frac{1}{x^{1/3}} = \frac{1}{x^{2/3}} = x^{-2/3} \quad f'(x) = -\frac{2}{3}x^{-5/3} = \frac{-2}{3x\sqrt[3]{x}}$$

$$f(x) = \sqrt[3]{x^2} + \sqrt{x}$$

$$(15) f(x) = \sqrt[3]{x^2} + \sqrt{x} = x^{2/3} + x^{1/2} \quad f'(x) = \frac{2}{3}x^{-1/3} + \frac{1}{2}x^{-1/2} = \frac{2}{3\sqrt[3]{x}} + \frac{1}{2\sqrt{x}}$$

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

$$(16) f(x) = (x^2 + 3x - 2)^4 \quad f'(x) = 4(x^2 + 3x - 2)^3 (2x + 3) - (8x + 12)(x^2 + 3x - 2)^3$$

$$u = x^2 - 2x + 3$$

$$u' = 2x - 2$$

$$f(x) = \sqrt{x^2 - 2x + 3}$$

$$(17) f(x) = \sqrt{x^2 + 2x + 3} = (x^2 - 2x + 3)^{1/2} \quad f'(x) = \frac{1}{2}(x^2 - 2x + 3)^{-1/2} (2x - 2)$$

$$u = x^2 - 2x + 3$$

$$u' = 2x - 2$$

$$\frac{2x - 2}{2(x^2 - 2x + 3)^{3/2}} = \frac{x - 1}{\sqrt{x^2 - 2x + 3}}$$

$$f(x) = \sqrt[4]{x^5 - x^3 - 2}$$

$$(18) f(x) = \sqrt[4]{x^5 - x^3 - 2} = (x^5 - x^3 - 2)^{1/4}$$

$$u = x^5 - x^3 - 2$$

$$u' = 5x^4 - 3x^2$$

$$f'(x) = \frac{1}{4}(x^5 - x^3 - 2)^{-3/4} (5x^4 - 3x^2)$$

$$\frac{5x^4 - 3x^2}{4\sqrt[4]{(x^5 - x^3 - 2)^3}}$$