Lista 3 - Calculo I

September 10, 2023

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

$$\frac{d}{dx}(3x^3 - 2x^2 + x - 100)$$
$$9x^2 - 4x + 1$$

11.

$$\frac{d}{dx}\left(\frac{1-x}{x+1}\right)$$
$$\frac{(1-x)'(x+1)-(1-x)(x+1)'}{(x+1)^2}$$
$$\frac{1(x+1)-(1-x)(1)}{(x+1)^2}$$
$$\frac{(x+1)-(1-x)}{(x+1)^2}$$
$$\frac{x+1-1+x}{(x+1)^2}$$
$$\frac{2x}{(x+1)^2}$$

12.

$$f'(x)=\frac{d}{dx}\left(x^3-6x^2+9x-1\right)$$
$$f'(x)=3x^2-12x+9$$
$$3x^2-12x+9=0$$
$$x^2-4x+3=0$$
$$(x_1,x_2)=(1,3)$$

13.

$$L'(p) = \frac{d}{dx}\left(-p^3 + 7p^2 - 11p + 5\right)$$
$$L'(p) = -3p^2 + 14p - 11$$
$$-3p^2 + 14p - 11 = 0$$
$$3p^2 - 14p + 11 = 0$$
$$(x_1, x_2) = \frac{14 \pm \sqrt{196 - 12 \times 11}}{6}$$
$$(x_1, x_2) = \frac{14 \pm \sqrt{196 - 132}}{6}$$
$$(x_1, x_2) = \frac{14 \pm \sqrt{64}}{6}$$
$$(x_1, x_2) = \frac{14 \pm 8}{6}$$
$$(x_1, x_2) = \left(\frac{22}{6}, \frac{6}{6}\right)$$
$$(x_1, x_2) = \left(\frac{11}{3}, 1\right)$$

14.

15.

$$f'(x) = \frac{d}{dx}\left(\frac{1}{x}\right)$$
$$f'(x) = \frac{0 \times x - 1 \times 1}{x^2}$$
$$f'(x) = -\frac{1}{x^2}$$
$$f'(1) = -\frac{1}{1^2} = -1$$