ATIVIDADE 1 - CÁLCULO I

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Turma: 07

1) a)

$$g[f(x)] = (1 - x)^2 - 1$$
$$g[f(x)] = (1 - 2x + x^2) - 1$$
$$g[f(x)] = x^2 - 2x - 1 + 1$$
$$g[f(x)] = x^2 - 2x$$

b)

$$f[g(x)] = 1 - (x^2 - 2x)$$
$$f[g(x)] = -x^2 + 2x + 1$$

c)

$$y = x^2 - 1$$
$$x = y^2 - 1$$
$$-y^2 = -x - 1$$
$$y^2 = x + 1$$
$$y = \sqrt{x + 1}$$

d)
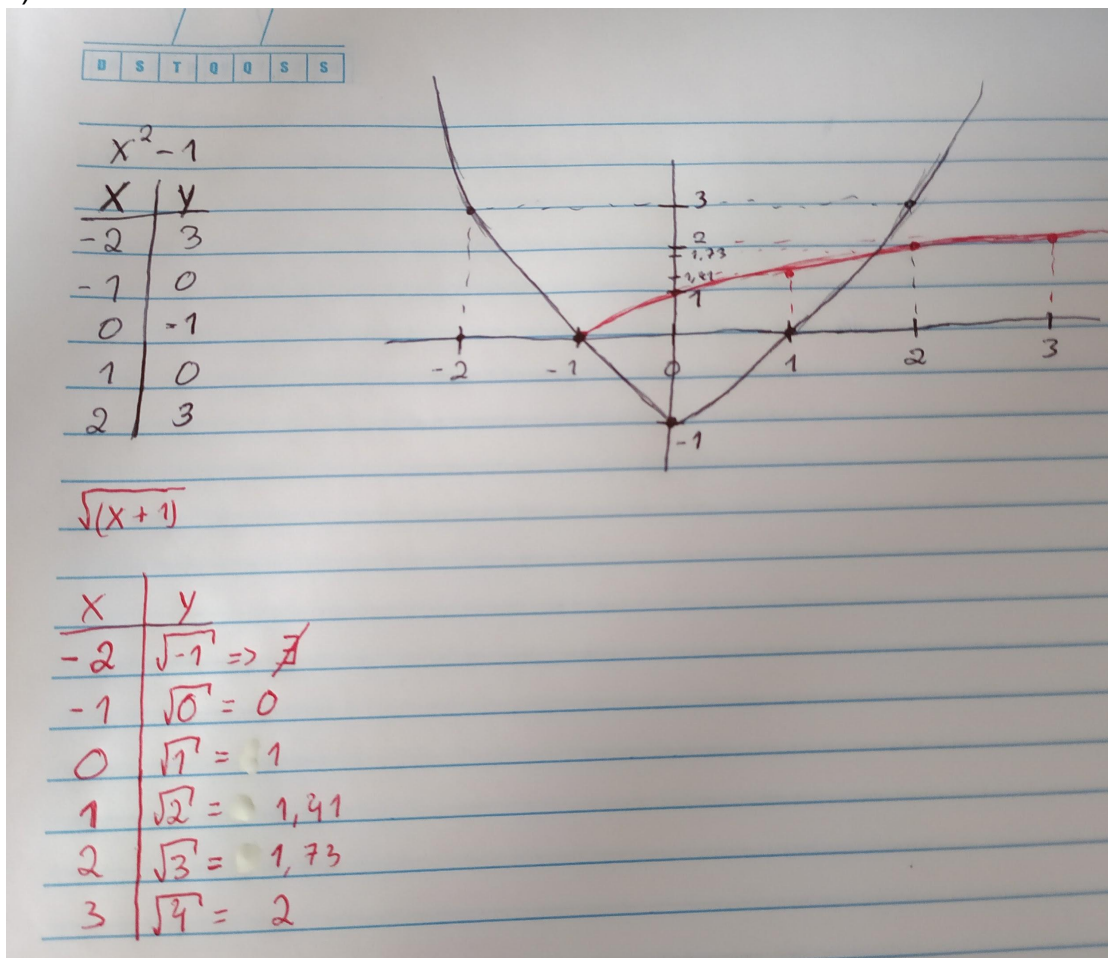
e)

$$x^2 - 1$$
$$D = [0, +\infty[$$
$$I = [-1, +\infty[$$

$$\sqrt{x + 1}$$
$$D = [-1, +\infty[$$
$$I = [0, +\infty[$$

2) a)

$$\sec x = sen\,x \cdot tg\,x + \cos x$$
$$\sec x = sen\,x \cdot \frac{sen\,x}{\cos x} + \cos x$$
$$\sec x = \frac{sen^2 x}{\cos x} + \cos x$$
$$\sec x = \frac{sen^2 x + \cos^2 x}{\cos x}$$
$$\sec x = \frac{1}{\cos x}$$

b)

$$\frac{\cos^2 x}{1 + sen\,x} = 1 - sen\,x$$
$$\cos^2 x = (1 - sen\,x) \cdot (1 + sen\,x)$$
$$\cos^2 x = 1^2 - sen^2 x$$
$$\cos^2 x + sen^2 x = 1$$

3) a)

$$2 \cdot \ln y = 3 \cdot \ln x + 4 \cdot \ln 5$$
$$\ln y^2 = \ln x^3 + \ln 5^4$$
$$y^2 = x^3 \cdot 5^4$$
$$y = \sqrt{x^3 \cdot 5^4}$$
$$y = 5^2\sqrt{x^3}$$
$$y = 25\sqrt{x^3}$$

b)

$$\ln y = 5x + \ln 7$$
$$\ln y - \ln 7 = 5x$$
$$\ln \frac{y}{7} = 5x$$
$$e^{\ln \frac{y}{7}} = e^{5x}$$
$$\frac{y}{7} = e^{5x}$$
$$y = 7 \cdot e^{5x}$$

4)

$$\log_{\frac{1}{x}} 16 = -\frac{4}{3}$$
$$4^2 = \left(\frac{1}{x}\right)^{-\frac{4}{3}}$$
$$4^{2 \cdot \frac{3}{4}} = \left(\frac{1}{x}\right)^{-(\frac{4}{3} \cdot \frac{3}{4})}$$
$$4^{\frac{3}{2}} = \left(\frac{1}{x}\right)^{-(1)}$$
$$\sqrt{4^3} = x$$

$$\sqrt{64} = x$$
$$x = 8$$