1) $\cancel{f(2-x)}$

$$2 - x \neq 0 \Leftrightarrow -x \neq -2 \Leftrightarrow x = 2$$
$(x-1)$

2)

a) $$\lim_{x \to 2} = \frac{x^2-4}{x^2-5x+6} = \frac{2x}{2x-5} = \frac{2(2)}{2(2)-5} = \frac{4}{-1} = -4$$

b) $$\lim_{x \to +\infty} \frac{3x^2-x+1}{2x^2+5} = \frac{3x^2-x}{2x^2} + \frac{1}{5} = \cancel{(3x-x)(3x+x)}$$

$$\frac{(3x-x)(3x+x)}{2x^2} + \frac{1}{5}$$

3) $$f(x) = \frac{x^2-9}{x-3} = \frac{\cancel{(x-3)}(x+3)}{\cancel{x-3}} = x+3 =$$

$$f(3) = x+3 = 3+3 = 6$$

$$k = 6$$

4)

$$f(0) = x^3 - 4x + 1 = (0)^3 - 4(0) + 1 = 0 - 0 + 1 = 1$$

$$f(2) = x^3 - 4x + 1 = (2)^3 - 4(2) + 1 = 8 - 8 + 1 = 1$$

não tem um zero entre [0, 2]

5) $$x - 2 \neq 0 \Leftrightarrow x = 2$$

$$\lim_{x \to 2^+} = \frac{2x^2+3x-1}{x-2} = \frac{2(2^+)^2 + 3x - 1}{2^+ - 2} = \frac{8+6-1}{0^+}$$

$$= \frac{13}{0^+} = +\infty$$

$$\lim_{x \to 2^-} = \frac{2x^2+3x-1}{x-2} = \frac{2(2^-)^2 + 3(2^-) - 1}{2^- - 2} = \frac{8+6-1}{0^-} = -\infty$$

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

$$mx = \frac{2x^2+3x-1}{x^2-2x} \cdot x = \frac{2x^3+3x^2-x}{x^2-2x}$$

$$b = \lim_{x \to \pm\infty} \left[\frac{2x^2+3x-1}{x-2} - \frac{2x^3+3x^2-x}{x^2-2x}\right] =$$

Assintota vertical = 2

Sem Assintota Obliqua

Sem Assintota horizontal

7)

a) $\int 3x^4 - 2x^2 + 5 \, dx = \frac{3x^5}{5} - \frac{2x^3}{3} + 5x + C, C \in \mathbb{R}$

b) $\int \frac{6x}{x^2+4} =$

8)

$\int x \cdot e^{2x} \, dx = x \cdot e^{2x} - \int e^{2x} = x \cdot e^{2x} - \frac{e^{2x}}{2} + C, C \in \mathbb{R}$

9) $\int_0^1 3x^2 + 2x \, dx = \left[\frac{3x^3}{3} + \frac{2x^2}{2}\right]_0^1 = \left(\frac{3(0)^3}{3} + \frac{2(0)^2}{2}\right) + \left(\frac{3(1)^3}{3} + \frac{2(1)^2}{2}\right)$

$\left(\frac{0}{3} + \frac{0}{2}\right) + \left(\frac{3}{3} + \frac{2}{2}\right) = 0 + 2 = 2$

10)