Kerby Lovince

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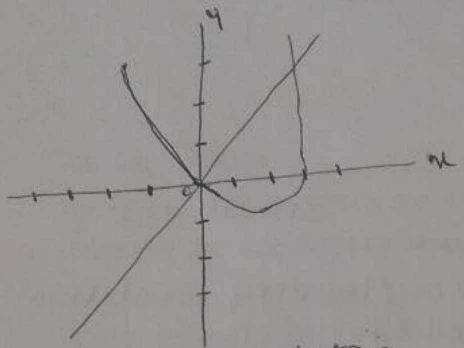
2) $x^4 - 2x^3$



a) encontra o assintotais

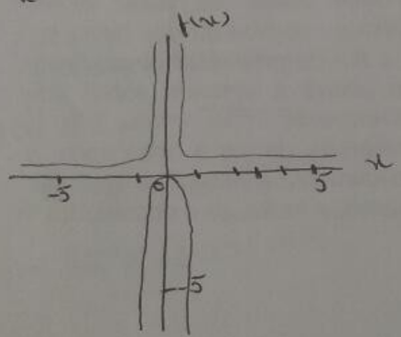
$y=0$, $x=2$

b) $(-\infty,0)(0,3/2$

c) $(-\infty,0)$

d) concavidade voltando para cima

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



os assintotais

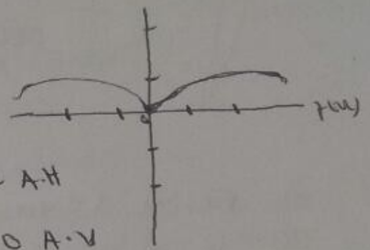
$\frac{x^2}{x^2-1}$ $\quad x^2-1 \neq 0 \quad$ $x \neq 1, x \neq -1$

$x = -1$ AV, $x = 1$ A·H

b) $(-\infty,+\infty)$

c) maximo $m=0$

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



$y=1$ A·H

$x=0$ A·V

b) $(0,+\infty)$

c) $(0,+\infty)$

d) concavidade para cima

Exo 6

$60t_E = 30 - 40t_E$

$60t_E + 40t_E = 30$

$100t_E = 30$

$t_E = \frac{30}{100} = 0{,}3$

$S_A(0{,}3) = 60 \times 0{,}3 = 18$ Km

$S_B(0{,}3) = 30 - 40 \times 0{,}3$

$S_B(0{,}3) = 30 - 12$

$S_B(0{,}3) = 18$ Km

a distancia entre os carros è 18 Km

$x =$

Exo 7

$\pi R^2 \cdot h = 50\pi$

$R^2 \cdot h = \frac{50\pi}{\pi} \Rightarrow R^2 \cdot h = 50$

$h = \frac{50}{R^2}$ valor h

$custo = 25(R^2 \cdot \pi) + 20(2 \cdot \pi \cdot R h)$

$custo = 25(R^2\pi + 40\pi R \frac{50}{R^2}$

$custo = 25 R^2 \pi + \frac{40(50)\pi R}{R^2}$

$custo = 25 R^2 \pi + \frac{2000\,\pi R}{R^2}$

$custo = 25 R^2 \pi + 2000\,\pi R \cdot R^{-2}$

$custo = 25 R^2 \pi + 2000\,\pi R^1 \cdot R^{-2}$

$custo = 25 R^2 \pi + 2000\,\pi R^{1-2}$

$custo = 25 R^2 \pi + 2000 \cdot \pi R^{-1}$

deriva

$25 R^2 \cdot \pi + 2000\,\pi \cdot R^{-1}$

$2(25)\pi R^1 + (-1)2000\,\pi R^{-2}$

$50\pi R^1 - 2000 R^{-2}$

$50\pi R - 2000 R^{-2}$

$C'(R) = 0$

$50\pi R - 2000 R^{-2} = 0$

$50\pi R - \frac{2000}{R^2} = 0$

Exo 11

$\frac{\sqrt{(2-x)^2+1}}{6} + \frac{x}{9}$ derivando

$\frac{2(2-x)}{2 \cdot 6\sqrt{(2-x)^2+1}} + \frac{1}{9} = 0$

$\frac{2-x}{6\sqrt{(2-x)^2+1}} + \frac{1}{9} = 0$

$\frac{9(2-x)}{54\sqrt{(2-\cancel{x})^2+1}} - \frac{6\sqrt{(2-x)^2+1}}{54\sqrt{(2-x)+1}} = 0$

$\frac{9(2-x) - 6\sqrt{(2-x)^2+1}}{54\sqrt{(2-x)^2+1}} = 0$

$9(2-x) = 6\sqrt{(2-x)^2+1}$

$81(2-x)^2 = 36((2-x)^2+1))$

$81(4-4x+x^2) = 36(4-4x+x^2+1)$

$81x^2 - 324x + 324 =$

$36x^2 - 144x + 180$

$45x^2 - 18x + 144 = 0$

$$x = \frac{180 \pm \sqrt{(-180)^2 - 4(45)(144)}}{90}$$

$$x = \frac{180 \pm \sqrt{6480}}{90} = \frac{180 \pm \sqrt{2^4 \times 3^4 \times 5}}{90}$$

$$x = \frac{180 \pm 36\sqrt{5}}{90} = \frac{10 \pm 2\sqrt{5}}{5}$$

$x_1 = \dfrac{10 + 2\sqrt{5}}{5}$ (não convem >2)

$x_2 = \dfrac{10 - 2\sqrt{5}}{5}$ (certo)

x_2 aproxidomente

1,1056 km

EXO 12

$$tg(x+\theta) = \frac{tg x - tg\theta}{1 - tg^2 - tg\theta}$$

$$= \frac{\frac{2}{a} + tg\theta}{1 \cdot 2/a - tg\theta} = \underline{6/a}$$

$$\frac{2}{a} + tg\theta = \frac{6}{a} \cdot (1 \cdot 2/a \cdot tg\theta)$$

$$\frac{2}{a} + tg\theta = \frac{6}{a}(1 - 2/a\, tg\theta)$$

$$\Rightarrow \frac{2}{a} + tg\theta = \frac{6}{a} - \frac{12}{a^2} tg\theta$$

$$\Rightarrow \frac{12}{a^2} tg\theta + tg\theta = \frac{6}{a} - \frac{2}{a}$$

$$\Rightarrow \left(\frac{12}{a^2} + 1\right) tg\theta = \frac{4}{a}$$

$$\frac{12 + a^2}{a^2} tg\theta = \frac{4}{a}$$

$$tg\theta = \frac{4}{a} \cdot \frac{a^2}{12 + a^2} = \frac{4a}{12 + a^2}$$

$$y = arc(tg - \theta) \quad y' = \frac{x}{1 + x^2}$$

$$y = \frac{\frac{48 - 4a^2}{(12 + a^2)^2}}{1 + \left(\frac{4a}{12 + a^2}\right)^2} =$$

$$y = \frac{\frac{48 - 4a^2}{(12 + a^2)^2}}{\frac{1 + 16a^2}{(12 + a^2)^2}} = \frac{\frac{48 - 4a^2}{(12 + a^2)^2}}{\frac{(12 + a^2)^2 + 16a^2}{12 + a^2}}$$

$$y = \frac{48 - 4a^2}{(12 + a^2)^2 + 16a^2} = \frac{48 - 4a^2}{144 + 40a^2 + a^4}$$

$$y = \frac{48 - 4a^2}{a^4 + 40a^2 + 144} = \frac{48 - 4a^2}{a^4 + 36a^2 + 4a^2}$$

$$y = \frac{48 - 4a^2}{a^2(a^2 + 36) + 4(a^2 + 36)^2}$$

$$y = \frac{48 - 4a^2}{(a^2 + 36)(a^2 + 4)} \Rightarrow y = \frac{6}{a^2 + 36} + \frac{2}{a^2 + 4}$$

$$y = \frac{6}{36} + \frac{2}{4}$$

$$\boxed{y = 2/3}$$

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