Universidade Federal do Rio Grande - FURG

+MatE

Projeto Mais Matemática para as Engenharias
Curso intensivo de matemática básica

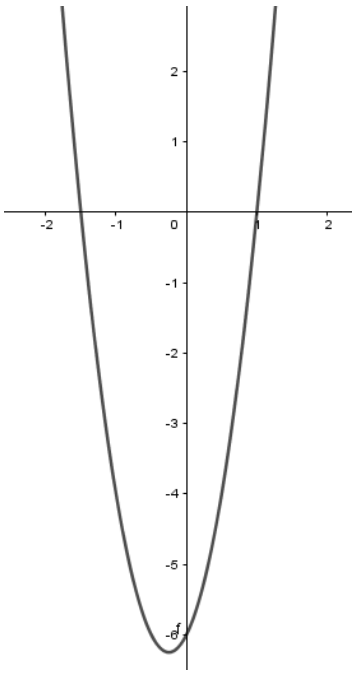
GABARITO

Instituto de Matemática, Estatística e Física - IMEF

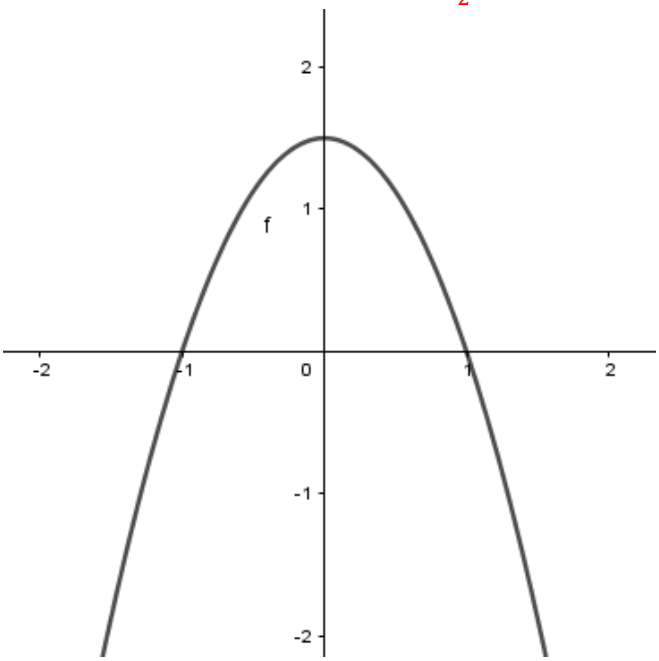
LISTA 3

1.

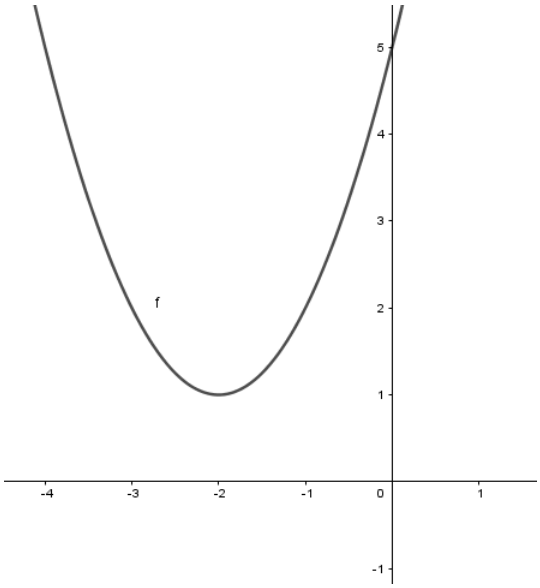
a) x' = 1 , x''=$-\frac{3}{2}$, V($-\frac{1}{4}$, $-\frac{25}{4}$)



b) x'= 1 , x''=-1 , V(0,$\frac{3}{2}$)



2.



3. $y = x^2 + 2x - 3$

4. Quociente: x+9 , Resto : 11x-41

5. (x-3)(x-1)(x+5)

6. x<0

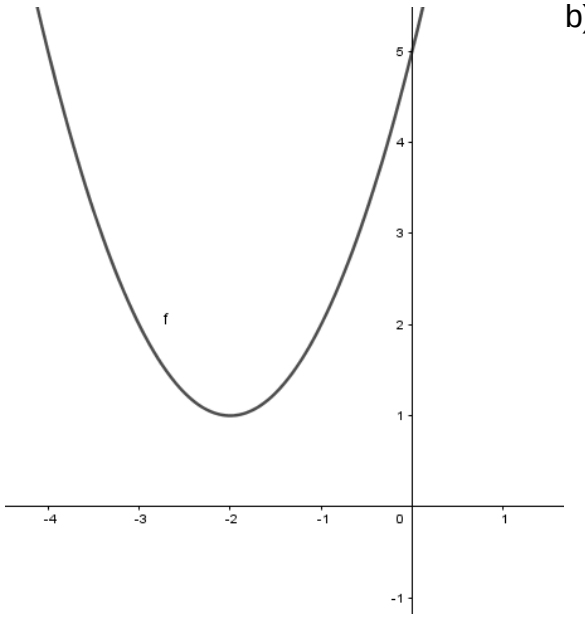
7. f(x) >0 se $x>\frac{5}{2}$

   f(x)<0 se $x<\frac{5}{2}$ e $x\neq 1$

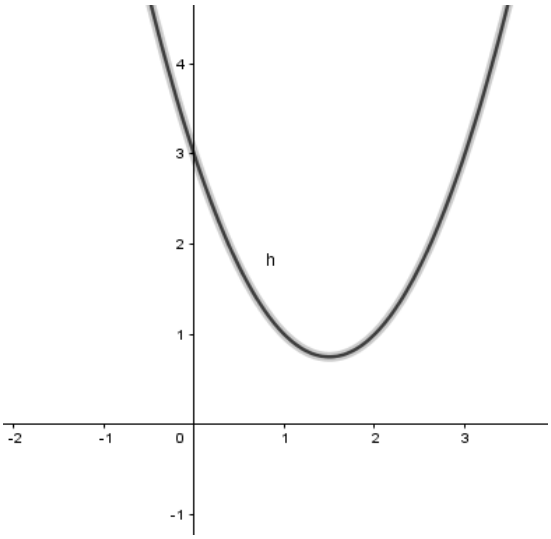
   f(x)=0 se $x=\frac{5}{2}$

8.

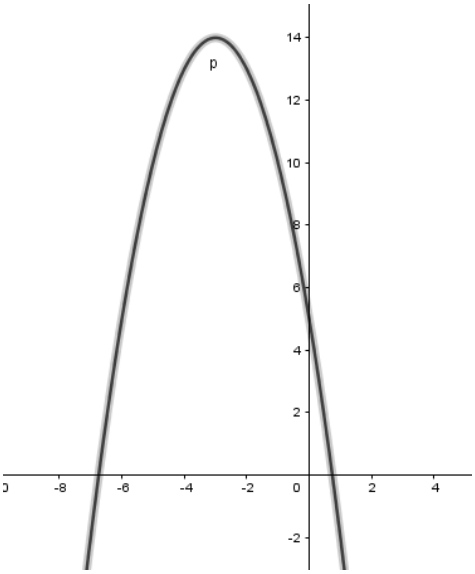
a)



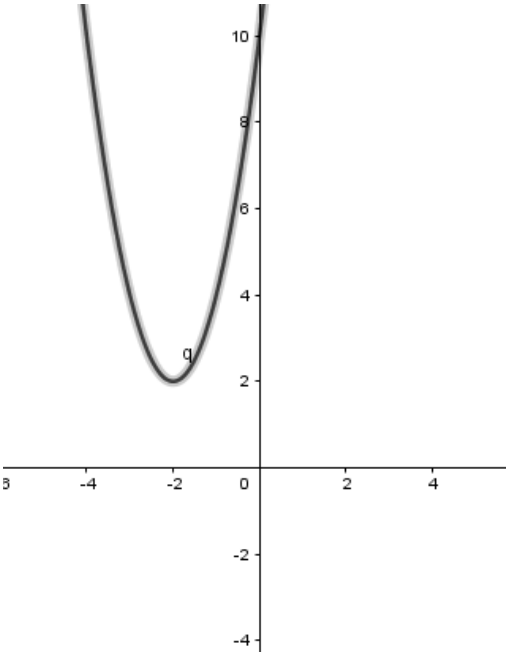
b)



c)



d)



9. a) $y=\frac{5}{4}(x+1)^2 - 5$ b) $y = 5(x-1)^2 - 5$ c) $y= -3(x-1)^2 + 12$

10.

a) Quociente = $5x^2 - \frac{5x}{2} + \frac{85}{2}$, Resto = $\frac{-381x^2}{2} + \frac{1415x}{2} + 255$

b) Quociente = $x^3 + 4x^2 - 24x + 24$, Resto = -20

c) Quociente = $x^4 + 8x^3 + 23x^2 + 69x + 199$, Resto= 597

d) Quociente= $x^5 + \frac{224x^4}{100} + 8x^3 + \frac{1789x^2}{100} + 41x + \frac{9168}{100}$, Resto = 205

11.

a) $3x(x+1)(x-2)(x+7)$

b) $10x^2(x+3)(x - \frac{1}{2})(x+ \frac{1}{5})$

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

d) $4(x+\frac{1}{2})(x-\frac{1}{2})(x^2+1)$

e) $9(x-3)(x-1)^2(x - \frac{1}{3})^2$

12.

a) $-\sqrt{5} < x < \sqrt{5}$

b) $-2 < x < 2$

c) $x<2$ ou $x>3$

d) $-5<x<2$ ou $x>4$

e) $x \neq 1$

f) $x< -1$ ou $-\frac{1}{3} < x < 2$

g) Todo X real. .

13.

a) f(x)>0 com x>2
f(x)<0 com x<2
f(x)=0 com x=2

b) g(x)>0 com 0<x<2 ou x>3
g(x)<0 com x<0 ou 2<x<3
g(x)=0 com x=2 e x=3

c) h(x)>0 com -1<x<0 ou 0<x<1 ou x>3
h(x)<0 com x<-1 ou 1<x<3
h(x)=0 com x=1 e x=3
h(x) não está definida em x=0 e x= -1.

14.

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

b) $3x^3 +7x^2 +9x +11 + \frac{5x-11}{x^2-2x+1}$

c) $x^3 -9x + \frac{38x^2}{x^3+4x}$

15.

a) t=0 , t=2 e t=3

b) p(t)>0 para t em $(0,2)\cup(3, \infty)$
p(t) <0 para t em (2,3)

c) $v_{\{2,t\}} = \frac{t(t-3)}{t^2+1}$ para $t \geq 0$ e $t \neq 2$

d) $v_{\{2,t\}} \leq 0$ em $[0,2)\cup(2,3)$

e) $v_{\{2,t\}}\ se\ aproxima\ de\ -\frac{2}{5}$

16) x=25m e y=25m