

1. Se  $f(x) = 3x^2 + 2$  e  $g(x) = \frac{1}{3x+2}$ , determine:

(a)  $(f+g)(x)$

(c)  $(f \cdot g)(x)$

(e)  $\left(\frac{g}{f}\right)(x)$

(b)  $(f(x))^{-1}$

(d)  $\left(\frac{f}{g}\right)(x)$

(f)  $(f \circ g)(x)$

2. Seja  $f(x) = \frac{3-x}{x}$ . Determine:

(a)  $f(x^2) - (f(x))^2$

(b)  $f\left(\frac{1}{x}\right) - \frac{1}{f(x)}$

(c)  $(f \circ f)(x)$

3. Dadas  $f(x) = \begin{cases} -x & , \quad x < 0 \\ x^2 & , \quad x \geq 0 \end{cases}$  e  $g(x) = \begin{cases} \frac{1}{x} & , \quad x < 0 \\ \sqrt{x} & , \quad x \geq 0 \end{cases}$ , determine: (a)  $(f \circ g)(x)$   
 (b)  $(g \circ f)(x)$

Nos exercícios 4. a 11., a partir do gráfico da função  $y = f(x)$  dado abaixo, esboce o gráfico da função dada.

4.  $y = f(|x|)$

8.  $y = f(x+2)$

5.  $y = |f(x)|$

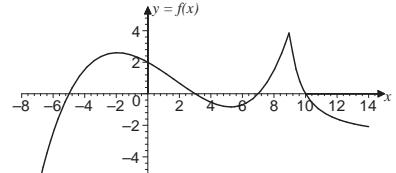
9.  $y = f(x) + 3$

6.  $y = f(-x)$

10.  $y = \frac{f(x) + |f(x)|}{2}$

7.  $y = -f(x)$

11.  $y = \frac{f(x) - |f(x)|}{2}$



Esboce os gráficos das funções dos exercícios 12. a 17.

12.  $f(x) = 8 - 3\sqrt{\frac{x}{2} - 1}$

14.  $f(x) = |x-1|^3$

16.  $f(x) = (|x|-1)^3$

13.  $f(x) = \sqrt{2|x|-6}$

15.  $f(x) = 1 + \sqrt[3]{1-x}$

17.  $f(x) = |x^2 - 4|x| + 3|$

Nos exercícios 18. a 21. determine o domínio, a imagem e esboce o gráfico da função dada.

18.  $f(x) = 3 \operatorname{sen}(2\pi x)$

20.  $f(x) = \left| \operatorname{sen}\left(\frac{x}{2}\right) - \frac{1}{2} \right|, \quad 0 \leq x \leq 4\pi$

19.  $f(x) = \tan\left(\frac{x}{2}\right)$

21.  $f(x) = \frac{1}{2} \sec\left(x - \frac{\pi}{3}\right)$

## RESPOSTAS

1. (a)  $y = \frac{9x^3 + 6x^2 + 6x + 5}{3x + 2}, x \neq -\frac{2}{3}$

(b)  $y = \frac{1}{3x^2 + 2}$

(c)  $y = \frac{3x^2 + 2}{3x + 2}, x \neq -\frac{2}{3}$

2. (a)  $y = \frac{6x - 2x^2 - 6}{x^2}$

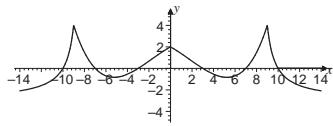
(b)  $y = \frac{9x - 3x^2 - 3}{3 - x}$

(c)  $y = \frac{4x - 3}{3 - x}$

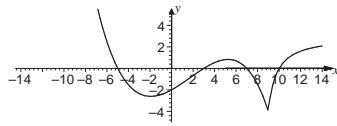
3. (a)  $(f \circ g)(x) = \begin{cases} -\frac{1}{x}, & x < 0 \\ x, & x \geq 0 \end{cases}$

(b)  $(g \circ f)(x) = \begin{cases} \sqrt{-x}, & x < 0 \\ x, & x \geq 0 \end{cases}$

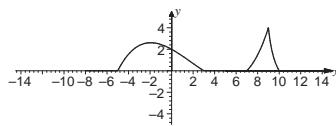
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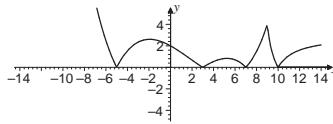
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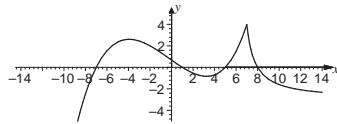
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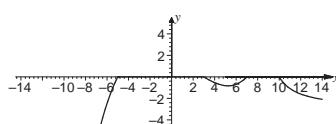
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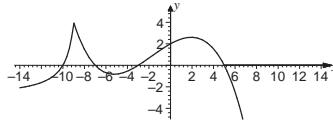
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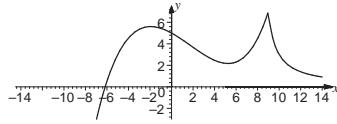
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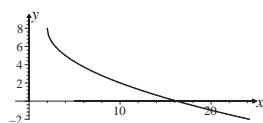
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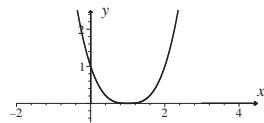
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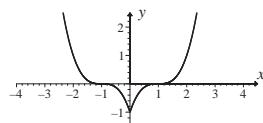
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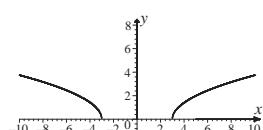
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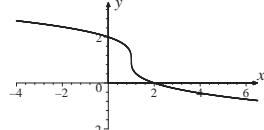
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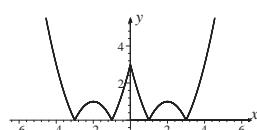
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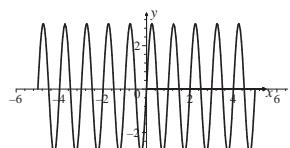
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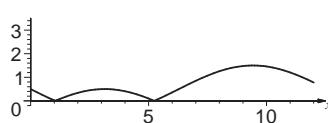
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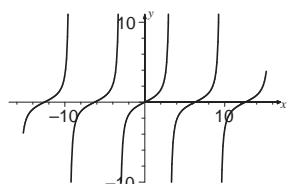
18.



20.



19.



21.

