

Exam

Name _____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Find the domain of the given function.

1) $f(x) = \sqrt{10 - x}$

1) _____

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

2) _____

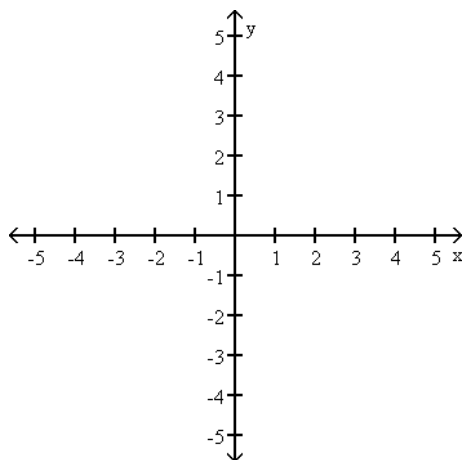
3) $f(x) = \frac{\sqrt{x + 5}}{(x + 7)(x - 8)}$

3) _____

Graph the function and determine if it has a point of discontinuity at $x = 0$. If there is a discontinuity, tell whether it is removable or non-removable.

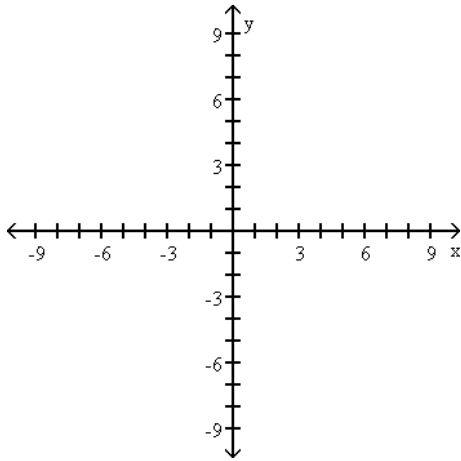
4) $f(x) = \frac{2}{x}$

4) _____



5) $g(x) = \frac{x^2 - 4x}{x}$

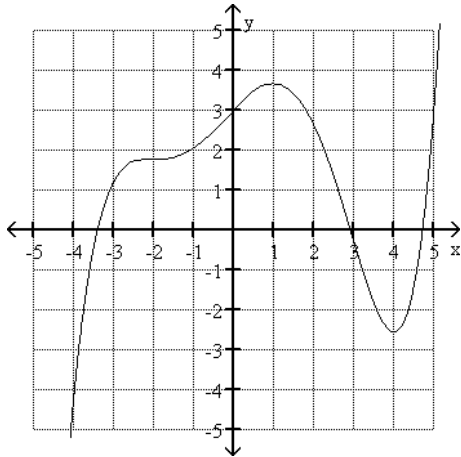
5) _____



Solve the problem.

6) Use the graph of f to estimate the local maximum and local minimum.

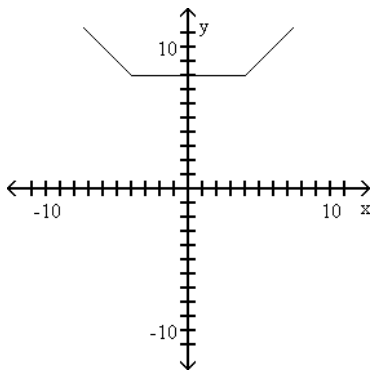
6) _____



Determine the intervals on which the function is increasing, decreasing, and constant.

7)

7) _____



Identify intervals on which the function is increasing, decreasing, or constant.

8) $h(x) = |x + 1| + |x - 5| - 12$

8) _____

Determine if the function is bounded above, bounded below, bounded on its domain, or unbounded on its domain.

9) $y = 1 - x^2$ 9) _____

10) $y = \sqrt{7 - x^2}$ 10) _____

11) $y = 8x - x^3$ 11) _____

Solve the problem.

12) Determine graphically the local maximum and local minimum of $f(x) = -4x^{2/3} + 5$. 12) _____

13) Estimate graphically the local maximum and local minimum of $f(x) = \frac{1}{3}x^3 + x^2 - 3x$. 13) _____

Determine algebraically whether the function is even, odd, or neither even nor odd.

14) $f(x) = 2x^2 - 4$ 14) _____

15) $f(x) = -8x^4 - 4x - 5$ 15) _____

16) $f(x) = x + \frac{11}{x}$ 16) _____

Find the asymptote(s) of the given function.

17) $f(x) = \frac{x - 9}{x^2 + 8}$ vertical asymptotes(s) 17) _____

18) $f(x) = \frac{x - 6}{x^2 - 25}$ vertical asymptotes(s) 18) _____

19) $f(x) = \frac{8x^2 + 5}{8x^2 - 5}$ horizontal asymptotes(s) 19) _____

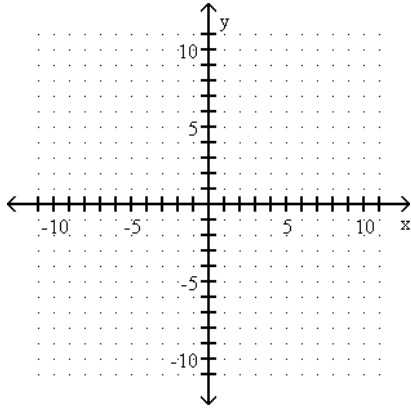
20) $g(x) = \frac{x^2 + 2x - 4}{x - 4}$ horizontal asymptotes(s) 20) _____

21) $g(x) = \frac{x + 2}{x^2 - 5}$ horizontal asymptotes(s) 21) _____

Graph the piecewise-defined function.

22)

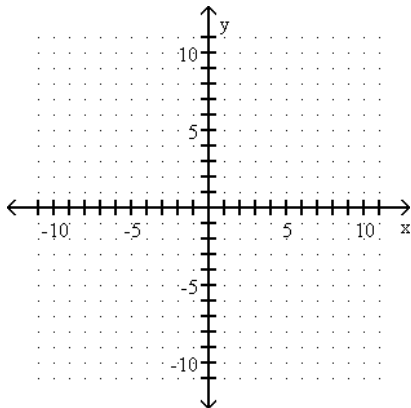
$$y(x) = \begin{cases} 8x + 5, & \text{if } x < 0 \\ 2x^2 - 4, & \text{if } x \geq 0 \end{cases}$$



22) _____

23)

$$f(x) = \begin{cases} |x| - 4, & \text{if } x < 0 \\ -4, & \text{if } x \geq 0 \end{cases}$$



23) _____

Perform the requested operation or operations.

24) $f(x) = \sqrt{x+6}$; $g(x) = 8x - 10$
Find $f(g(x))$.

24) _____

25) $f(x) = x^2 + 1$; $g(x) = \sqrt{x-3}$
Find $f(g(x))$.

25) _____

Find functions f and g so that $h(x) = f(g(x))$.

26) $h(x) = |6x + 5|$

26) _____

27) $h(x) = \frac{10}{\sqrt{9x+7}}$

27) _____

Find the inverse of the function.

28) $f(x) = x^3 + 7$

28) _____

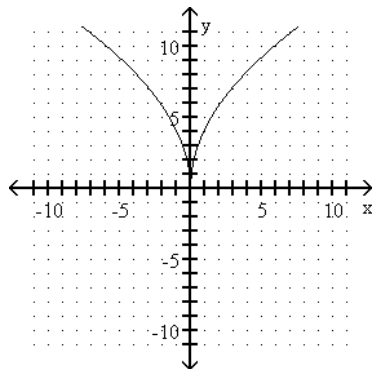
29) $f(x) = \frac{-6x + 8}{8x - 3}$

29) _____

Determine if the function is one-to-one.

30)

30) _____



31)

31) _____

