CUNY York College
Math 120

Name:
Midterm Review sheet

To review for the midterm, complete this review sheet and also study your class notes and handouts.

Find the real solutions, if any, of the equation. Use the quadratic formula.

1) $x^2 - 4x - 7 = 0$

List the intercepts for the graph of the equation.

2) $y^2 = x + 25$

Find an equation for the line, in the indicated form, with the given properties. Graph the line.

3) Containing the points (-3, -4) and (2, -2); slope-intercept form

Find the slope-intercept form of the equation of the line with the given properties.

4) Horizontal; containing the point (-8, 8)

Find an equation for the line with the given properties.

5) Vertical line; containing the point (-10, 5)

6) Parallel to the line $5x + 7y = -43$; containing the point (4, -15)

7) Perpendicular to the line $y = 3x - 4$; containing the point (2, 4)

Solve the problem.

8) Find the equation of a circle in standard form where C(6, -2) and D(-4, 4) are endpoints of a diameter.

Find the center (h, k) and radius r of the circle with the given equation.

9) $x^2 + (y + 2)^2 = 16$

10) $4x^2 + 4y^2 - 12x + 16y - 5 = 0$

Determine whether the relation represents a function. If it is a function, state the domain and range.

11) {(11, -4), (-5, -3), (-5, 0), (4, 3), (20, 5)}

Determine whether the equation defines y as a function of x. Answer yes or no.

12) $y = \pm\sqrt{1 - 3x}$

13) $y = \frac{1}{x}$

14) $y^2 = 8 - x^2$

Find the domain of the function.

15) $f(x) = \frac{x^2}{x^2 + 14}$

16) $\frac{x}{\sqrt{x - 5}}$

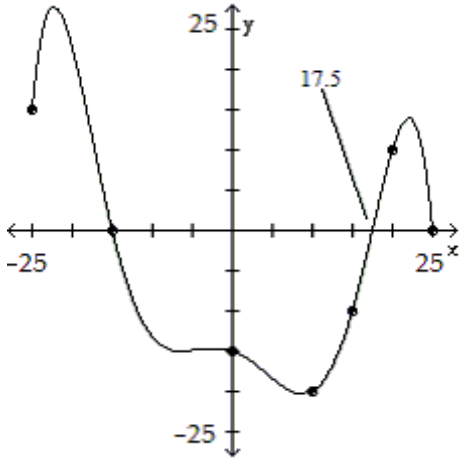
17) $f(x) = x^2 + 3$

18) $g(x) = \frac{x}{x^2 - 16}$

19) $f(x) = \sqrt{8 - x}$

The graph of a function f is given. Use the graph to answer the question.

20) Is f(-25) positive or negative?
For what values 'x' is f(x) positive?
For what values 'x' is f(x) negative?



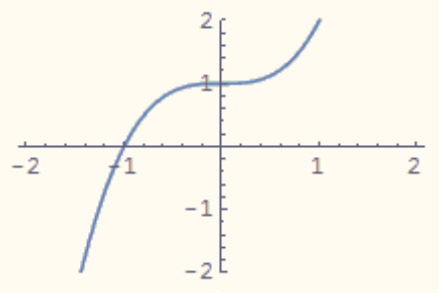
Answer the question about the given function.

21) Given the function $f(x) = 5x^2 + 10x + 2$, if x = -1, what is f(x)? What point is on the graph of f?

22) Given the function $f(x) = \frac{x^2 - 4}{x + 1}$, if f(x) = 0, what is x? What point(s) is on the graph of f?

The graph of a function is given. Decide whether it is even, odd, or neither.

23)



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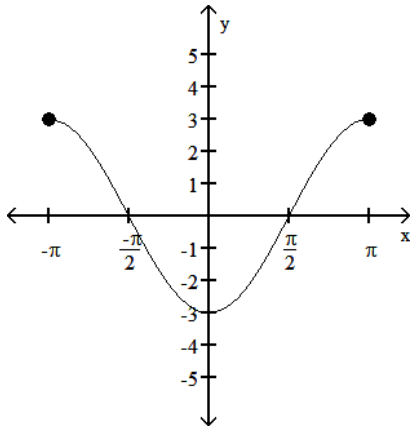


Determine algebraically whether the function is even, odd, or neither.

25) $f(x) = -3x^2 - 2$

26) $f(x) = \dfrac{x}{x^2 - 3}$

Write an equation that results in the indicated translation.

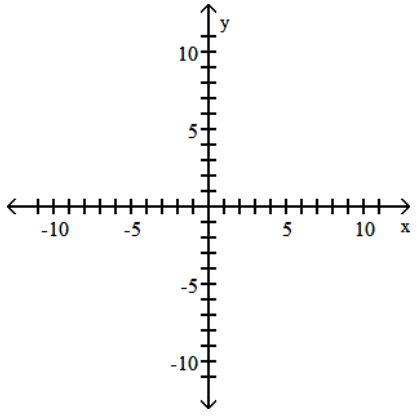
27) The reciprocal function, shifted 9 units to the right

28) The squaring function, shifted 3 units to the left, downward by 4

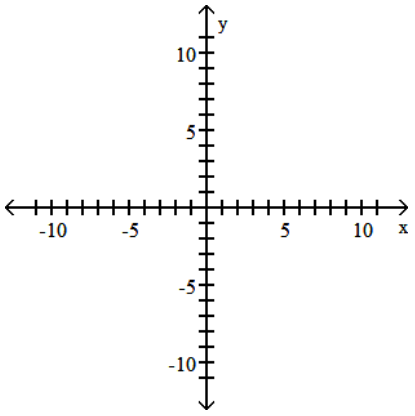
29) The absolute value function, shifted 7 units upward

Graph the function by starting with the graph of the basic function and then using the techniques of shifting, compressing, stretching, and/or reflecting.

30) $f(x) = \sqrt{x - 2}$

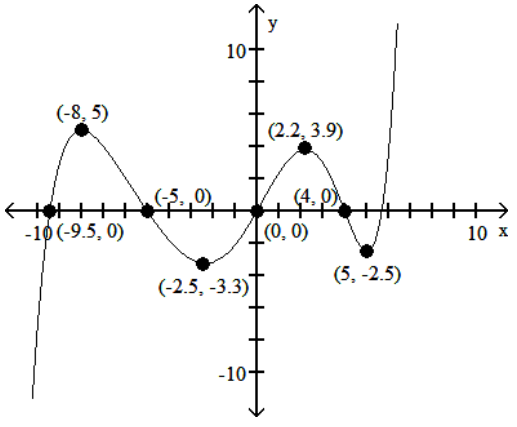


31) $f(x) = (x + 4)^2$



The graph of a function is given. Determine whether the function is increasing, decreasing, or constant on the given interval.

32) (-2.5, 2.2)

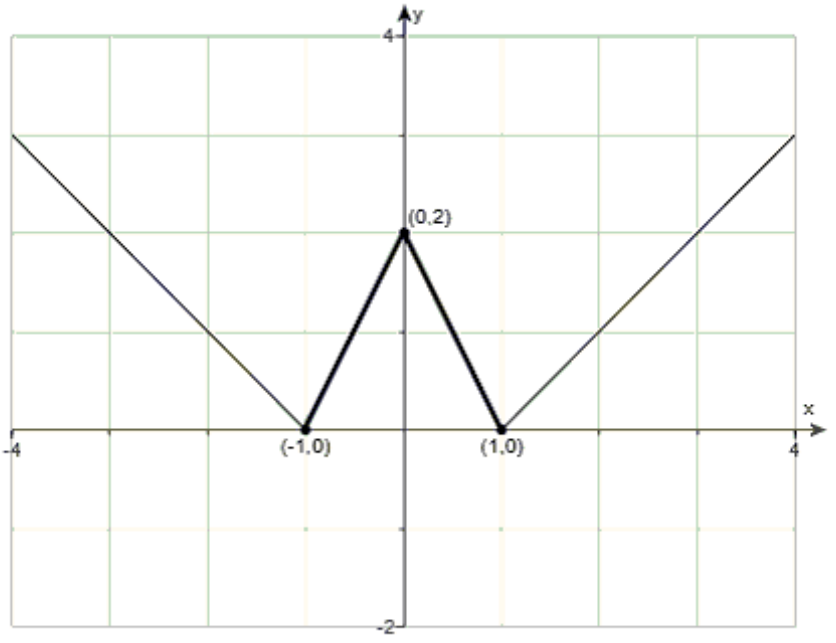


The graph of a function f is given. Use the graph to answer the question.

33) Use the graph to find:

(a) The numbers, if any, at which f has a local maximum. What are these local maxima?

(b) The numbers, if any, at which f has a local minimum. What are these local minima?



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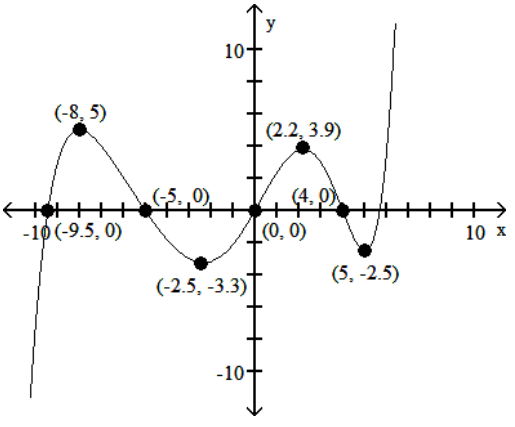
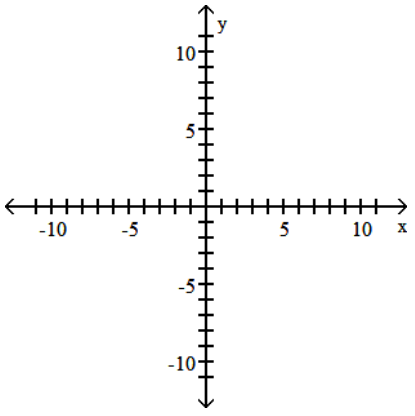


For what value(s) of x, if any, does 'f'' have a local minimum? _____ List the minimum value(s)_____
For what value(s) of x, if any, does 'f' have a local maximum.? _____ List the maximum value(s)_____

Graph the function using its vertex, axis of symmetry, and intercepts.

35) $f(x) = x^2 + 2x - 8$



Name the quadrant in which the angle θ lies.

36) $\csc \theta > 0$, $\sec \theta > 0$

37) $\cot \theta < 0$, $\cos \theta > 0$

38) $\sec \theta < 0$, $\tan \theta < 0$

Find the exact value of the expression. Do not use a calculator.

39) $\tan 150° \cos 210°$

40) $\cos \frac{\pi}{3} + \tan \frac{5\pi}{3}$

41) $\sin 135° - \sin 270°$

A point on the terminal side of an angle θ is given. Find the exact value of the indicated trigonometric function of θ.

42) $(-3, 2)$ Find $\cot \theta$.

43) $(4, 5)$ Find $\tan \theta$.

In the problem, sin θ and cos θ are given. Find the exact value of the indicated trigonometric function.

44) $\sin\theta = \frac{1}{4}$, $\cos\theta = \frac{\sqrt{15}}{4}$ Find $\cot\theta$.

Find the exact value of the indicated trigonometric function of θ.

45) $\tan\theta = -\frac{8}{5}$, θ in quadrant II Find $\cos\theta$.

Graph the function.

46)

$$f(x) = \begin{cases} -x + 2 & x < 0 \\ \sqrt{x} + 3 & x \geq 0 \end{cases}$$