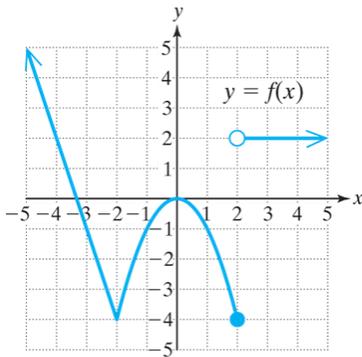


EXAM 1 Review

1. Find the distance between the points $(2, -6)$ and $(-5, 2)$. Give the exact solution and an approximation to the nearest hundredth.
2. Find the midpoint of the line segment with end points $(-1, -3)$ and $(3, -7)$.
3. Determine the x -intercept and the y -intercept of the equation $4x - 5y = 60$. Graph the equation using the intercepts.
4. Determine if the relation $\{(-2, 1), (5, 3), (-3, 1), (-2, 6), (7, 5)\}$ is a function. Explain why it is a function or why it is not a function.
5. Given $f(x) = x^2 - 3x + 2$, evaluate the following:
 - a. $f(-2)$
 - b. $f(2)$
 - c. $f(0)$
 - d. $f(5)$
6. Determine the Domain and Range of the graphed Function



7. Determine the Domain of the function $f(x) = \frac{2x}{x^2 - 5x - 14}$ and write the domain in interval notation.
8. Solve the linear equation $5(x - 4) - 2 = 2(x + 7) - 3$
9. Solve the equation $\frac{x-1}{5} + \frac{x}{4} = \frac{x+3}{2} + 1$

10. Identify the following equations as Conditional, Identity or Contradiction.

- a. $-5 + 3x = 3(x - 1) - 2$
- b. $2x + 12 = x + 4$
- c. $3(2x - 1) = 5x - 4$
- d. $6x + 13 = -2(4 - 3x)$

11. Solve the rational equation $\frac{5}{x^2-4} - \frac{1}{x+2} = 0$

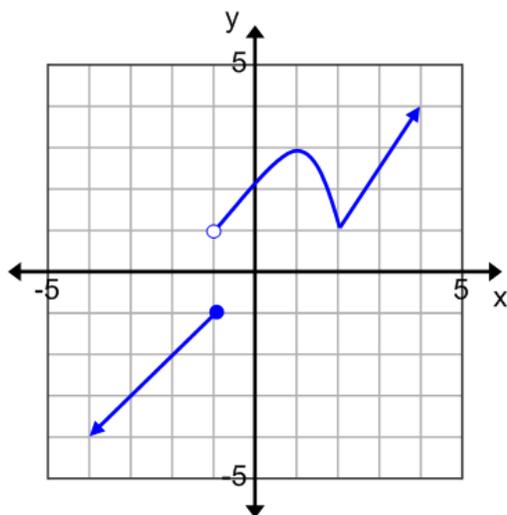
12. Solve $E = IR$ for R

13. A contractor must tile a rectangular kitchen that is 4 ft longer than it is wide, and the perimeter of the kitchen is 48 ft.

- a. Find the dimensions of the kitchen.
- b. How many square feet of tile should be ordered if the contractor adds an additional 10% to account for waste?

14. Determine the slope of the line passing through the points $(-9, 4)$ and $(-1, -6)$.

15. Find the slope and y-intercept of the equation $3x = 5y - 2$.



16. Given the function above $y = f(x)$ find the following:

- a. Determine $f(-1)$
- b. Determine $f(1)$
- c. Determine the x -intercept(s)
- d. Determine the y -intercept
- e. Determine the Domain of f
- f. Determine the Range of f

17. Find the slope of the following:

a. A line defined by $x = 5$

b. A line defined by $y = -2$

18. Write the equation of the line in slope-intercept form that passes through the point

$(4, -7)$ and has slope $m = -\frac{1}{2}$

19. Write an equation of a line in slope-intercept form that passes through the points

$(-3, 7)$ and $(4, 2)$.

20. Determine the average rate of change of the function $f(x) = 2x^2 - 3$ on the given intervals.

a. $[1, 2]$

b. $[-3, -2]$

21. Write the equation of the line in slope-intercept form that is parallel to the line

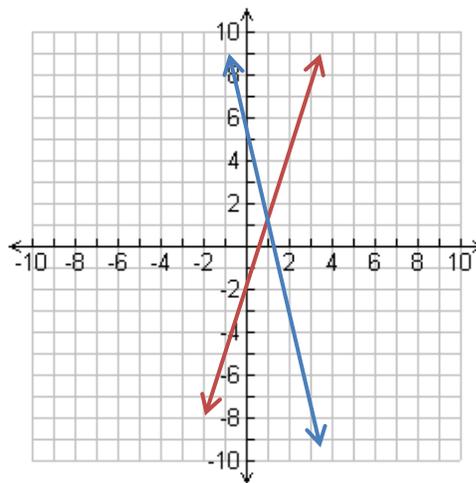
$4x - 5y = 2$ and passes through the point $(20, -13)$. Then write the equation of the line in slope-intercept form that is perpendicular to the line $4x - 5y = 2$ and passes through the point $(20, -13)$. Label the parallel and perpendicular line clearly.

22. Given the graphs of $y = 3x - 2$ (red) and $y = -4x + 5$ (blue) find the following using the graph.

a. $3x - 2 > -4x + 5$

b. $3x - 2 \leq -4x + 5$

c. $3x - 2 = -4x + 5$



23. The population of Dallas was 1,191,000 in 2000 and 1,246,000 in 2005. Find the average rate of change over the five year period.

24. At a Parking Garage in a large city, the charge for parking consists of a flat fee of \$2.00 plus a \$1.50/hr.

- Write a linear function to model the cost of parking $P(t)$ for t hours.
- Evaluate $P(1.6)$ and interpret the meaning in the context of the problem.

25. The table gives the average gestational period for select animals and their corresponding average longevity.

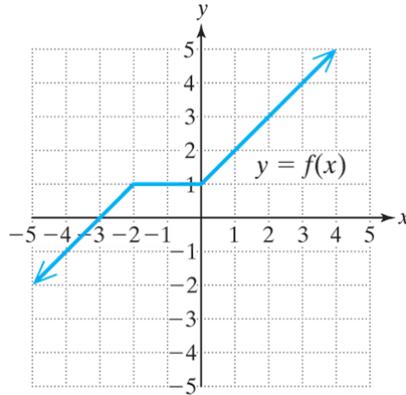
Animal	Gestation Period Days, x	Longevity Years, y
Rabbit	33	7
Fox	57	9
Lion	109	10
Sheep	148	12
Horse	337	23

- Use the table to find the least-squares regression line. Round to the nearest hundredth.
- Give the correlation coefficient to 4 decimal places and determine if the regression line is a good fit or not a good fit to the data.
- Use the model in (a) to estimate, to the nearest year, the longevity of an animal with a 200 day gestation period.

26. Given the function $f(x) = (x + 2)^2 - 3$. Identify and graph the basic function then use translations to graph the given function.

27. Given the function $f(x) = -2|x|$. Identify and graph the basic function and then use transformations to graph the given function.

28. Given the graph of $y = f(x)$. Graph $y = f(x - 3) - 2$



29. Write the equation of a function that has the form $y = x^3$, but has been reflected about the x -axis, shifted 8 units to the right and shifted up 2 units.
30. Determine whether the graph of the equation $x^2 + 2xy - y^2 = 4$ is symmetric with respect to the x -axis, the y -axis, and the origin.
31. Determine algebraically if the function $f(x) = x^3 - 4x + 7$ is Even, Odd, or Neither even nor odd.
32. Use the graphing capabilities of your graphing calculator to approximate the relative minima and relative maxima of the function $f(x) = 2x^3 - 3x^2 - x + 2$. Round to 3 decimal places
33. Determine the interval(s) on which the function from question 26 is increasing and decreasing.

Use the Piecewise defined function $h(x) = \begin{cases} x + 3 & x \leq 2 \\ x - 5 & x > 2 \end{cases}$ to answer questions 34 & 35

34. Evaluate $h(-2)$, $h(0)$, $h(2)$, $h(5)$

35. Graph $h(x)$.

36. Given $f(x) = x^2 - 4$ and $g(x) = x + 2$ find and simplify

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

c. $(fg)(x)$

b. $(g - f)(x)$

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

37. Given the function $f(x) = 4x - 7$ construct and simplify the difference quotient

$$\frac{f(x+h)-f(x)}{h}$$

38. Given the function $f(x) = 3x^2 - 2x + 7$ construct and simplify the difference quotient

$$\frac{f(x+h)-f(x)}{h}$$

39. Given $f(x) = 2x^2 + 3x - 5$ and $g(x) = 4x - 7$ find and simplify

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

b. $(g \circ f)(-3)$

40. Given $h(x) = \frac{x^3+5}{x^3-4}$ find two functions $f(x)$ and $g(x)$ such that $h(x) = (f \circ g)(x)$.