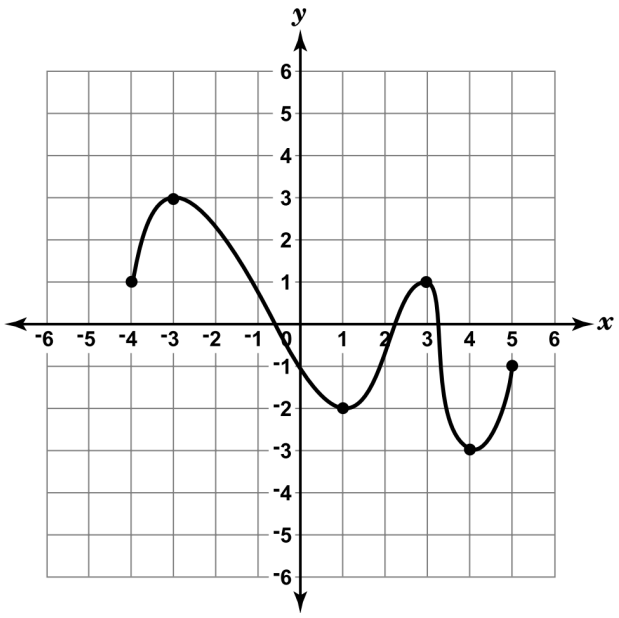
Final Exam Review, Unit 4

Name: _____ **Date:** _____

1. Look at the function that is graphed below.

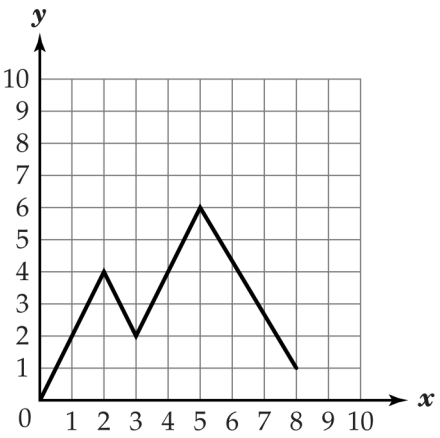


What is the range of this function?

A. $-4 \le y \le 5$ B. $-3 \le y \le 3$

C. $-2 \le y \le 3$ D. $-4 \le y \le -1$

2.

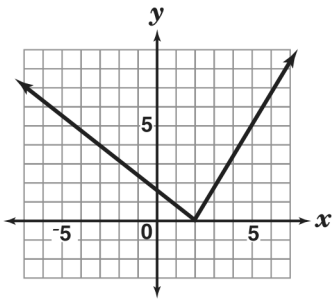


What is the domain of this function?

A. $0 \le x \le 5$ B. $0 \le x \le 8$

C. $0 \le y \le 1$ D. $0 \le y \le 6$

3. Look at the function that is graphed below.



Which of these describes the range of this function?

A. $y \ge 0$ B. $0 \le y \le 5$

C. all real numbers D. all whole numbers

4. What is the range (all possible y-values) of the function $y = x^2 - 9$ if x is any real number?

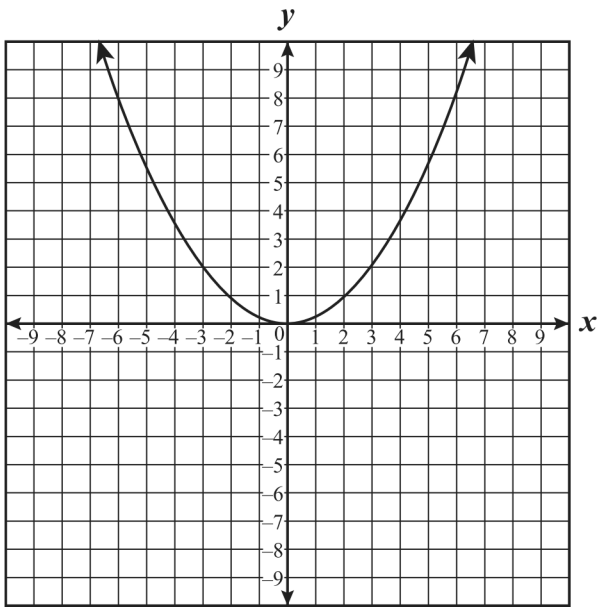
A. all real numbers except 3

B. all real numbers except $^-3$

C. all real numbers greater than or equal to 9

D. all real numbers greater than or equal to $^-9$

5. The vertex of the quadratic function shown on the grid below is at the origin.



If the graph of this function is translated 3 units to the right and 2 units up, which of the following best describes the domain of the resulting graph?

A. The domain of the resulting graph is all real numbers.

B. The domain of the resulting graph is all numbers greater than or equal to -2.

C. The domain of the resulting graph is all numbers from -4 to 10.

D. The domain of the resulting graph is all numbers greater than or equal to 2.

6. The function $f(x) = x^3 - 5x^2 - 2x + 24$ is positive for what parts of its domain?

A. $-2 \le x \le 3$ or $x \ge 4$ B. $-2 < x < 3$ or $x > 4$

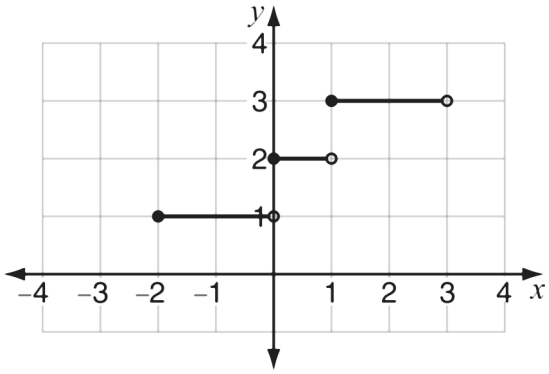
C. $x \le -2$ or $3 \le x \le 4$ D. $x < -2$ or $3 < x < 4$

7. What is the domain of the function $f(x) = \sqrt{x^2 - 3x - 10}$?

A. $-2 \le x \le 5$ B. $x \le -2$ or $x \ge 5$

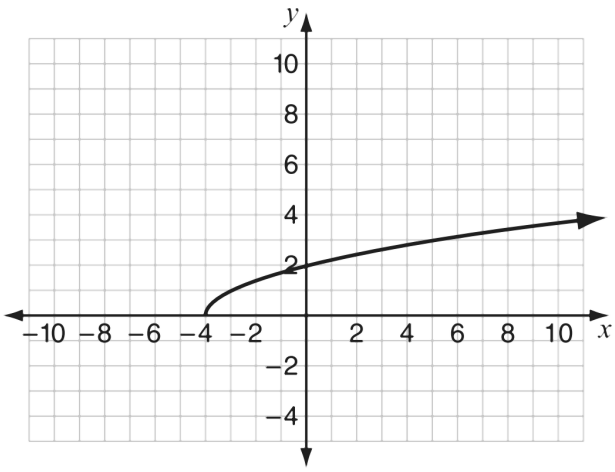
C. $x \ge 5$ D. $x \ge -2$

8. Look at this graph of a function.



What is the range of this function?

9. Look at this graph of a function. (y is a function of x.)



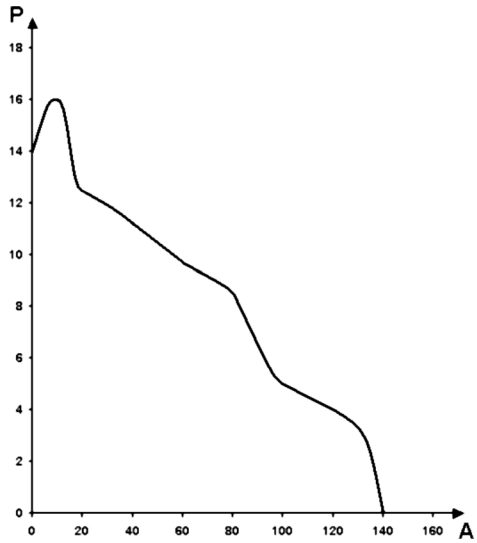
What is the domain of the function?

A. all real numbers

B. all real numbers except -4

C. all real numbers greater than or equal to 0

D. all real numbers greater than or equal to -4

10. 

The graph represents the atmospheric pressure (P in PSI) as a function of altitude (A in 1000's of ft) as collected from a weather balloon on a rainy day. What is the range of the function?

A. 0 to 16 PSI B. 16 PSI

C. 0 to 140,000 ft D. 140,000 ft

11. Consider the function $f(x) = ax^2 - 5$ where $a \neq 0$. What is the effect on the graph of f as the absolute value of a decreases?

A. The graph shifts left.

B. The graph shifts right.

C. The graph narrows.

D. The graph widens.

12. In which direction must the graph of $y = \frac{1}{x}$ be shifted to produce the graph of $y = \frac{1}{x+2}$?

A. up B. down C. right D. left

13. The graph of $g(x) = x^3 - 9x^2 + 3x - 1$ is translated up 5 units to produce the graph of the function $h(x)$. Which of the following could be $h(x)$?

A. $h(x) = x^3 - 9x^2 + 3x - 5$

B. $h(x) = x^3 - 9x^2 + 3x - 4$

C. $h(x) = x^3 - 9x^2 + 3x + 4$

D. $h(x) = x^3 - 9x^2 + 3x + 5$

14. How do the graphs of $f(x) = x^2 + x$ and $g(x) = x^2 + |x|$ compare?

A. $f(x) = g(x)$ for $x < 0$ B. $f(x) > g(x)$ for $x < 0$

C. $f(x) = g(x)$ for $x \geq 0$ D. $f(x) > g(x)$ for $x \geq 0$

15. In which direction is the graph of $f(x) = \frac{5}{x+b}$ translated when b increases?

A. left B. right C. up D. down

16. If $f(x) = 2x + 1$ and $g(x) = x^3$, what is $f(g(3))$?

A. 343 B. 189 C. 55 D. 34

17. In which direction does the graph of $y = (x+2)^{\frac{1}{2}} + c$ shift as c decreases?

A. right B. left C. up D. down

18. The graph of $f(x) = x^2 + 3$ is translated to produce the graph of $g(x) = (x+2)^2 + 3$. In which direction was the graph of f translated?

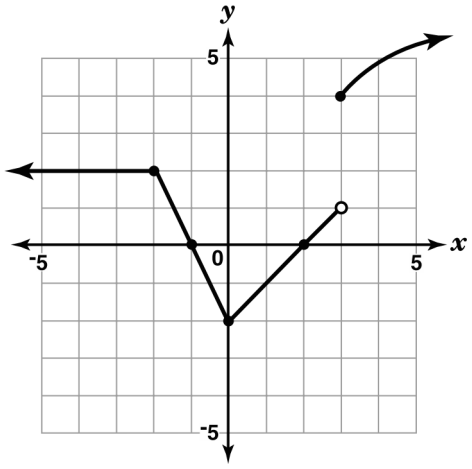
A. up B. down C. left D. right

19. Which is the inverse of the function $f(x) = x - 9$?

A. $f^{-1}(x) = \frac{1}{x+9}$ B. $f^{-1}(x) = x + 9$

C. $f^{-1}(x) = 9 - x$ D. $f^{-1}(x) = \frac{1}{x-9}$

20. Look at the graph below.



What is the x-value of the point where the graph is *not* continuous?

A. -3 B. -2 C. 0 D. 3

21. Valerie said that the GCF of two monomials is $7bc$.

What two monomials did she use?

A. $35ab^2c$ and $7abc^2$ B. $35ab^2c$ and $7bc^2$

C. ab^2 and $7bc^2$ D. ab^2c and $7abc^2$

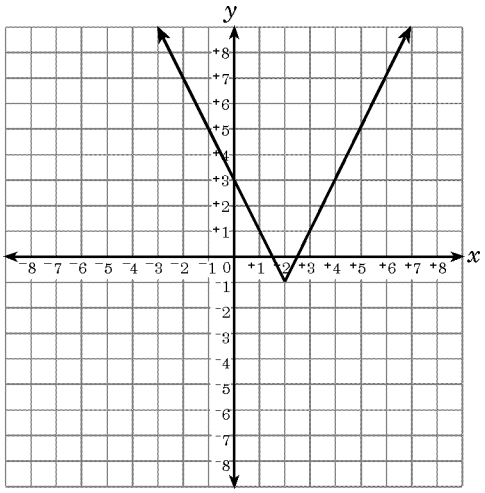
22. Which is the greatest common factor of the expression below?

$$32a^3b^2 + 36a^2c^2 - 16ab^3$$

A. $4a$ B. $4a^3b^2c^3$

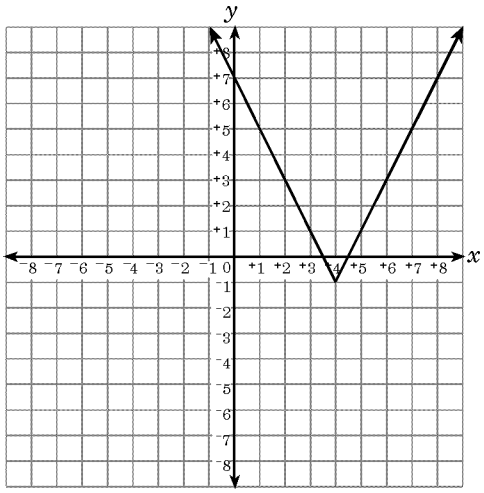
C. $6abc$ D. $8a^2b^2$

23. The graph of $y = f(x)$ is given.

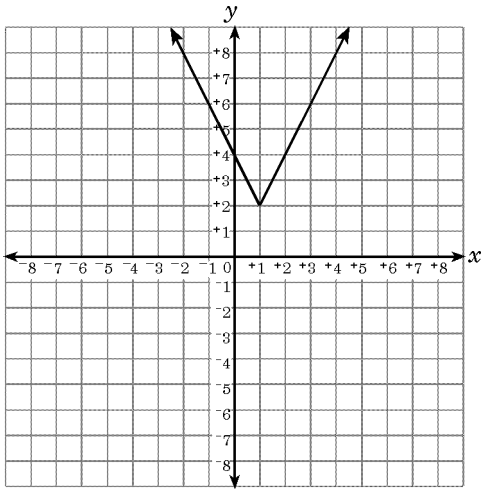


Which is the graph of $y = f(x + 1) - 2$?

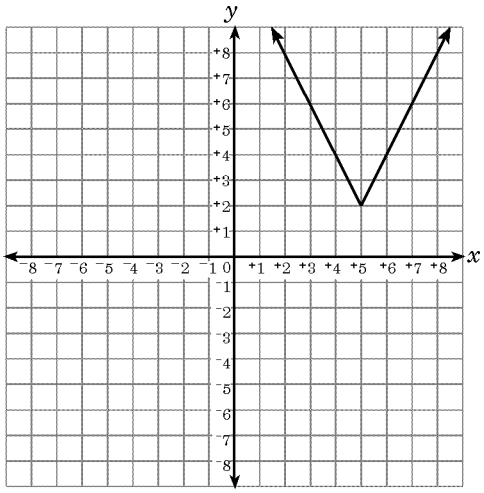
A.



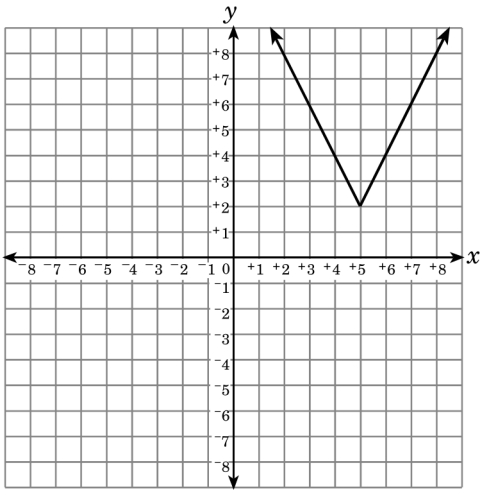
B.



C.



D.



24. Which of the following is the inverse of $f(x) = \dfrac{2x-3}{5}$?

A. $f^{-1}(x) = \dfrac{5x+3}{2}$ B. $f^{-1}(x) = \dfrac{-2x+3}{5}$

C. $f^{-1}(x) = \dfrac{2y-3}{5}$ D. $f^{-1}(x) = \dfrac{-5y-3}{2}$

25. If $f(x) = 2x + 3$, at what point do the graphs of $y = f(x)$ and $y = f^{-1}(x)$ intersect?

A. $(-1.5, 0)$ B. $(0, -1.5)$

C. $(-3, -3)$ D. $(3, 0)$

26. Which term results when $x^6 - 2ax + c$ is subtracted from $x^2 - ax$?

A. $-ax$ B. $-x^6$ C. c D. $-x^2$

Final Exam Review, Unit 4 12/30/2013

1.
Answer: B

2.
Answer: B

3.
Answer: A

4.
Answer:

5.
Answer: A

6.
Answer: B

7.
Answer: B

8.
Answer: $\{1, 2, 3\}$

9.
Answer: D

10.
Answer: A

11.
Answer: D

12.
Answer: D

13.
Answer: C

14.
Answer: C

15.
Answer: A

16.
Answer: C

17.
Answer: D

18.
Answer: C

19.
Answer: B

20.
Answer: D

21.
Answer: B

22.
Answer: A

23.
Answer:

24.
Answer:

25.
Answer:

26.
Answer: B