Unit One Review

Name: _____ **Date:** _____

1. If $f(x) = \dfrac{2x}{x+5}$, then the inverse function, $f^{-1}(x)$, is given by

   A. $\dfrac{-5x}{x-2}$ B. $\dfrac{x+5}{2x}$ C. $\dfrac{5x}{x-2}$

   D. $\dfrac{2x}{x+5}$ E. $(2x)(x+5)$

2. What is the solution set of the equation $|4a+6| - 4a = -10$?

   A. Ø B. $\{0\}$

   C. $\left\{\frac{1}{2}\right\}$ D. $\left\{0, \frac{1}{2}\right\}$

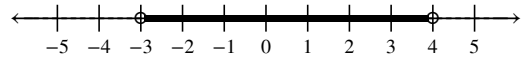
3. Solve: $2\,|3x-5| - 11 \leq 27$

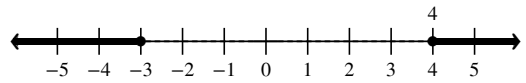
   A. $\left[\frac{-14}{3}, 8\right]$ B. $(-\infty, -8] \cup [8, \infty)$

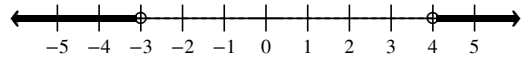
   C. $[-8, 8]$ D. $(-\infty, \frac{-14}{3}] \cup [8, \infty)$

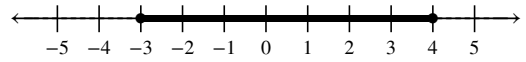
   E. $\left[-8, \frac{14}{3}\right]$

4. Which graph represents the solution set of $|2x-1| < 7$?

   A.
   

   B.
   

   C.
   

   D.
   

5. What is the domain of $f(x) = \sqrt{x-4}$ over the set of real numbers?

   A. (-∞,4] B. [4,∞)

   C. (4,∞) D. [4]

6. What is the range of $f(x) = |x-3| + 2$?

   A. [3,∞) B. [2,∞)

   C. (2,∞) D. (-∞,∞)

7. The completely factored form of $2d^4 + 6d^3 - 18d^2 - 54d$ is

A. $2d(d^2 - 9)(d + 3)$ B. $2d(d^2 + 9)(d + 3)$

C. $2d(d + 3)^2(d - 3)$ D. $2d(d - 3)^2(d + 3)$

8. Given $f^{-1}(x) = 3x - 10$, find $f(x)$.

A. $\frac{x}{3} + 10$ B. $\frac{1}{3x - 10}$ C. $\frac{x + 10}{3}$

D. $3x + 10$ E. $3x - 10$

9. What is the solution to $-2\,|\,10 - 5z\,| - 4 \leq 20$?

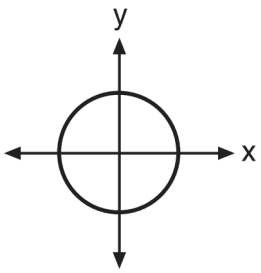
A. $-\frac{2}{5} \leq z \leq \frac{22}{5}$ B. $-\frac{22}{5} \leq z \leq \frac{2}{5}$

C. $z \leq -\frac{2}{5}$ or $z \geq \frac{22}{5}$ D. no solution exists

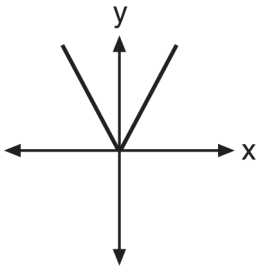
E. $\mathbb{R}$

10. Which graph is one-to-one?

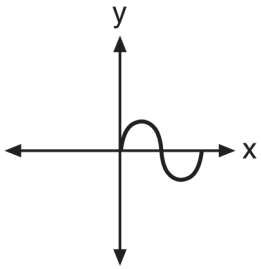
A.



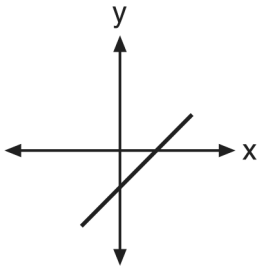
B.



C.

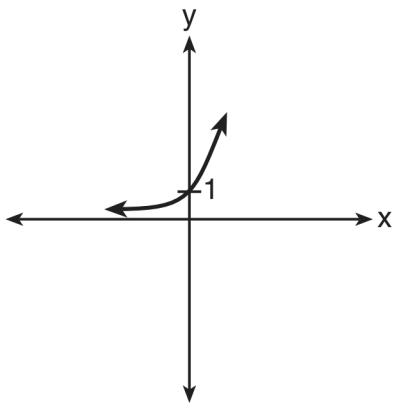


D.

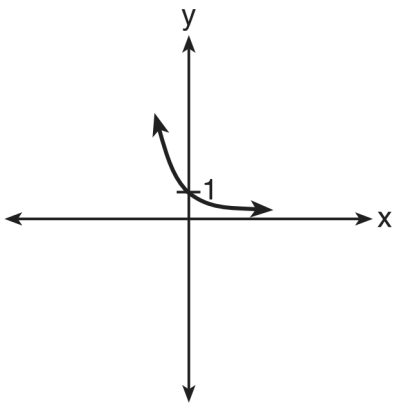


11. Which sketch shows the inverse of $y = a^x$, where $a > 1$?

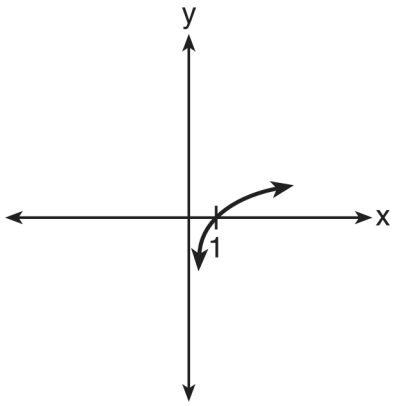
A.



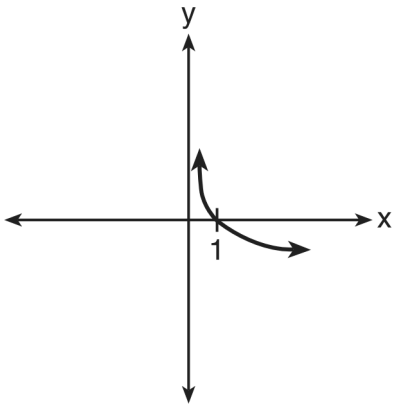
B.



C.

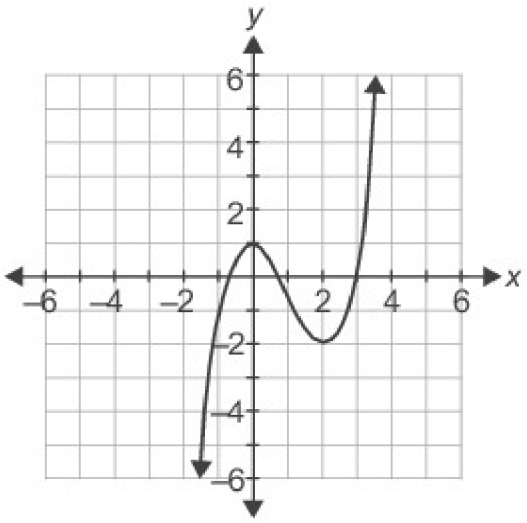


D.

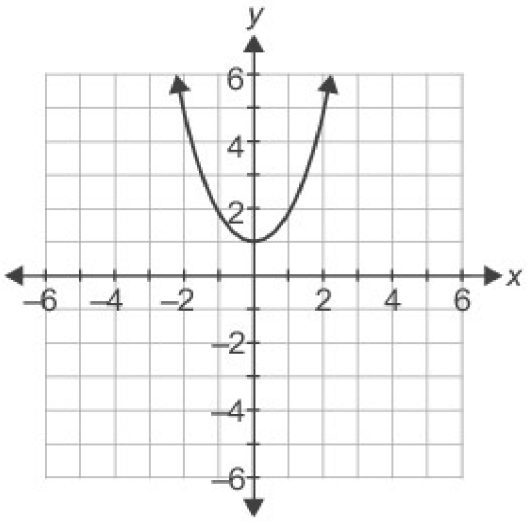


12. What is the graph of an odd function?

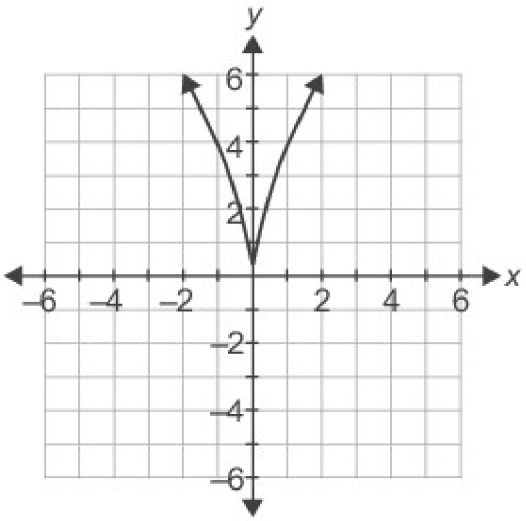
A.



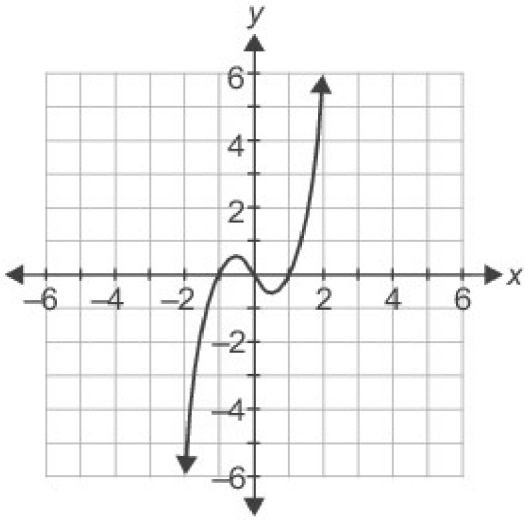
B.



C.



D.



13. Which function results by shifting the graph of $y = \ln(x + 3) - 6$ to the left 4 units and down 3 units?

A. $y = \ln(x + 7) - 9$ B. $y = \ln(x - 1) - 9$

C. $y = \ln(x + 7) - 3$ D. $y = \ln(x - 1) - 3$

14. Which of the following is the increasing interval for the following function: $f(x) = -(x + 1)^2 - 4$?

A. $(-\infty,-1)$ B. $(-\infty,-1]$

C. $(-1,\infty)$ D. $[-1,\infty)$

15. The sum of the factors of $12x^2 - 14x - 6$ is:

A. 8x - 1 B. 7x + 5

C. 5x D. 5x + 4

E. Cannot be factored

16. Find -2g(6) - g(-2) + 3g(-5) of the following piecewise function:

$$g(x) = \begin{cases} 3x + 12 & \text{for } x < -3 \\ -3x + 12 & \text{for } x \geq 3 \\ |x| & \text{for } -3 < x < 3 \end{cases}$$

17. Describe the end behavior of the following:

$$f(x) = 5x^7 + x^5 + 7x^3 + 6x + 7$$

A. Down & Down B. Up & Up

C. Down & Up D. Up & Down

18. The function f(c)= $\frac{9}{5}c + 32$ represents a conversion in temperature from Celsius to Fahrenheit. Explain the meaning of $f^{-1}(c) = 40$.

A. When the temperature is 40 degrees Celsius, then it is approximately 4 degrees Fahrenheit

B. When the temperature is 40 degrees Celsius, then it is 104 degrees Fahrenheit

C. When the temperature is 104 degrees Celsius, then it is 40 degrees Fahrenheit

D. When the temperature is approximately 4 degrees Celsius, then it is 40 degrees Fahrenheit

19. One of the factors of $5x^2 - 6xz - 15xy + 18yz$ is:

A. $x + 3y$ B. $x - 3y$

C. $5x - 3y$ D. $5x + 6z$

E. none of the above

20. $\left(x^2 - x\right)^2 + 4x^3 =$

A. $x(x + 1)^3$ B. $x^4 - x^3$ C. $4x^4 - x^3$

D. $4x^4 - 4x^3$ E. $x^2(x + 1)^2$

21. Factor the following: $f(x) = \frac{1}{x^4} - 256$.

A. $(\frac{1}{x^2} - 16)(\frac{1}{x^2} + 16)$

B. $(\frac{1}{x} - 4)(\frac{1}{x} + 4)(\frac{1}{x^2} + 16)$

C. $(x^{-1} + 4)(x^{-1} - 4)(x^{-2} + 16)$

D. $(x^{-2} + 16)(x^{-2} - 16)$

22. If the domain of $f(x) = 3x - 1$ is $\{0 < x \leq 3\}$, which number is *not* in the range?

A. –1 B. 2 C. 5 D. 7

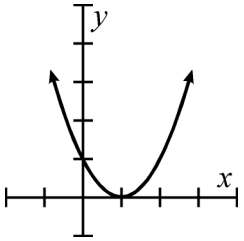
23. Find 2f(-1) - f(1) for the following piece wise function:

$$g(x) = \begin{cases} \sqrt{-x} & \text{for } x < 1 \\ x + 1 & \text{for } x \geq 1 \end{cases}$$

A. -2 B. 2

C. 0 D. undefined

24. Which is *not* true of the parabola f(x) = (x - 1)^2?



A. the y-intercept is $(0, 1)$

B. the x-intercept is $(1, 0)$

C. the vertex is (0,1)

D. the vertex is (1,0)

25. A flash sale is held at your shoe favorite store at 5:00 PM and the doors will only be open from 4:40 PM to 5:20 PM. Which of the following inequalities can be used to assess if you will be allowed to enter given that t is the time in hours after 12 PM when you arrive?

A. $|t - 5| \leq \frac{1}{3}$ B. $|t - 5| \leq 20$

C. $|t - \frac{1}{3}| \geq 5$ D. $|t - 20| \geq 5$

Unit One Review 02/06/2017

1.
Answer: A

2.
Answer: A

3.
Answer: A

4.
Answer: A

5.
Answer: B

6.
Answer: B

7.
Answer: C

8.
Answer: C

9.
Answer: E

10.
Answer: D

11.
Answer: C

12.
Answer: D

13.
Answer: A

14.
Answer: A

15.
Answer: C

16.
Answer: 1

17.
Answer: C

18.
Answer: B

19.
Answer: B

20.
Answer: E

21.
Answer: B

22.
Answer: A

23.
Answer: C

24.
Answer: C
Objective: F.IF.04

25.
Answer: A