

Name: _____

YOU MAY USE A CALCULATOR

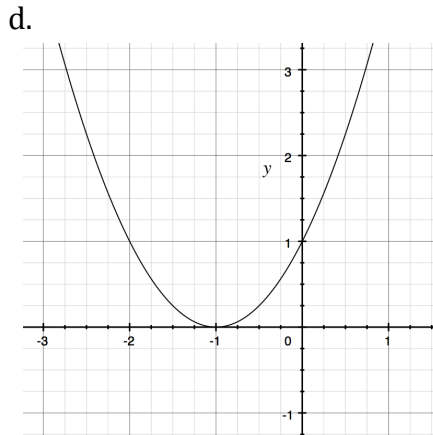
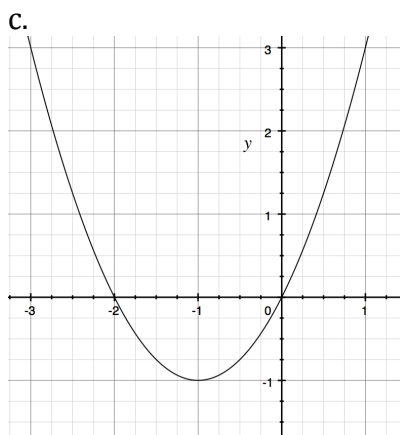
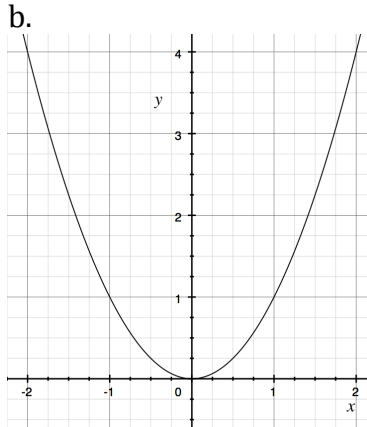
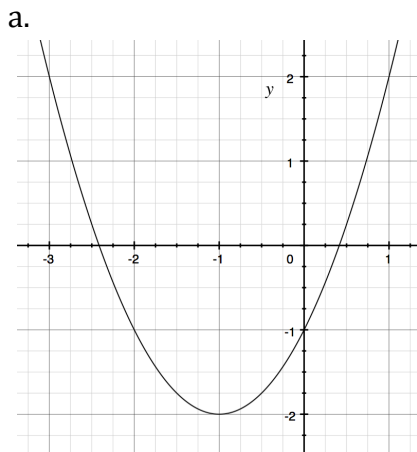
You have **45 minutes** to complete this assessment. You may write on the document.

1. In 1997 the population of a small town was 700. If the annual rate of increase is about 0.8%, which value below expresses the population five years later?

- a. $(700)(1.008)^5$
- b. $5(700)(1.008)$
- c. $(700)(0.008)^5$
- d. $(700)(5)(0.008)$

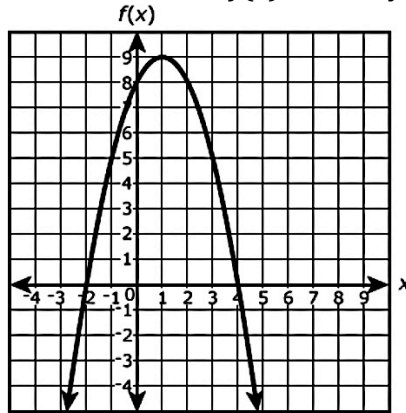
(A.CED.1, F.IF.4)

2. Which graph correctly depicts the function $f(x) = x^2 + 2x + 1$?



(A.CED.2)

3. The figure shows a graph of the function $f(x)$ in the xy -coordinate plane.



A second function $g(x) = -3x + 2$. Which inequality symbol ($<$, \leq , $>$, \geq) will correctly complete the sentence $f(2)$ is ___ $g(2)$?

- a. $<$
- b. \leq
- c. $>$
- d. \geq

(A.CED.3)

4. Solve the formula $p = \frac{4q^2}{s}$ for q .

- a. $q = \sqrt{\frac{ps}{4}}$
- b. $q = \pm \sqrt{\frac{ps}{4}}$
- c. $q = \sqrt{\frac{4}{ps}}$
- d. $q = \pm \sqrt{\frac{4}{ps}}$

(A.CED.4)

5. Which of the following sets of ordered pairs holds only solutions to the system shown below?

$$x^2 + y^2 = 1$$

$$y = x^2 - 1$$

- a. $\{(0, 1), (-1, -1), (0, 0)\}$
- b. $\{(-1, 1), (1, 1), (0, 1)\}$
- c. $\{(0, -1), (-1, 0), (1, 0)\}$
- d. $\{(-1, 1), (1, -1), (0, 0)\}$

(A.REI.11)

6. $f(x) = x^2 + 2x + 1$ and $g(x) = x$. Find $f(x) - g(x)$ and state its domain.

- a. $f(x) - g(x) = x^2 + x + 1$; the domain = {all Reals, $x \neq 0$ }
- b. $f(x) - g(x) = x^2 + x + 1$; the domain = {all Reals}
- c. $f(x) - g(x) = x^2 - x + 1$; the domain = {all Reals, $x \neq 0$ }
- d. $f(x) - g(x) = x^2 - x + 1$; the domain = {all Reals}

(F.BF.1.b., F.IF.5)

7. Describe what the following transformation will do to the graph of $f(x)$.

$$f(x) \rightarrow f(x + 3)$$

- a. The graph will shift 3 units up the y-axis.
- b. The graph will shift 3 units down the y-axis.
- c. The graph will shift 3 units to the left on the x-axis.
- d. The graph will shift 3 units to the right on the x-axis.

(F.BF.3)

8. What is the inverse of the function $f(x) = x + 2$?

- a. $f^{-1}(x) = 2 + x$
- b. $f^{-1}(x) = x - 2$
- c. $x = y - 2$
- d. $x = -y + 2$

(F.BF.4.a.)

9. For the function, $f(x) = 3(1.05)^x$, which part of the function is the y-intercept?
- 1.05 is the y-intercept.
 - 0.05 is the y-intercept.
 - 3 is the y-intercept.
 - x is the y-intercept.

(A.SSE.1, F.IF.4)

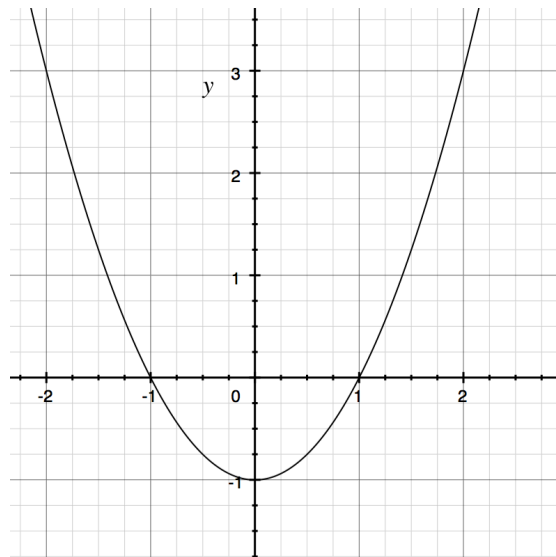
10. Determine the sum of the first 6 terms of this geometric series:

$$256 + 128 + 64 + \dots$$

- 504
- 496
- 448
- 384

(A.SSE.4)

11. Use the graph to determine the average rate of change over the interval $[-1, 2]$.



- The average rate of change over the interval $[-1, 2]$ is 1.
- The average rate of change over the interval $[-1, 2]$ is -1.
- The average rate of change over the interval $[-1, 2]$ is 0.
- The average rate of change over the interval $[-1, 2]$ is 3.

(F.IF.6)

12. Which list shows the parabolas in order from narrowest graph to widest graph?

- a. $y = 2x^2, y = x^2, y = \frac{1}{4}x^2, y = \frac{1}{2}x^2$
- b. $y = \frac{1}{4}x^2, y = \frac{1}{2}x^2, y = x^2, y = 2x^2$
- c. $y = 2x^2, y = x^2, y = \frac{1}{2}x^2, y = \frac{1}{4}x^2$
- d. $y = 2x^2, y = x^2, y = \frac{1}{2}x^2, y = \frac{1}{4}x^2$

(F.IF.9, F.BF.3)

13. Determine the real zeros of $(x^2 - 4)(3x - 1)(x^2 + 1) = 0$.

- a. $2, -2, \frac{1}{3}, -1$
- b. $2, -2, \frac{1}{3}$
- c. $2, -2, -\frac{1}{3}$
- d. $2, -2, \frac{1}{3}, 1, -1$

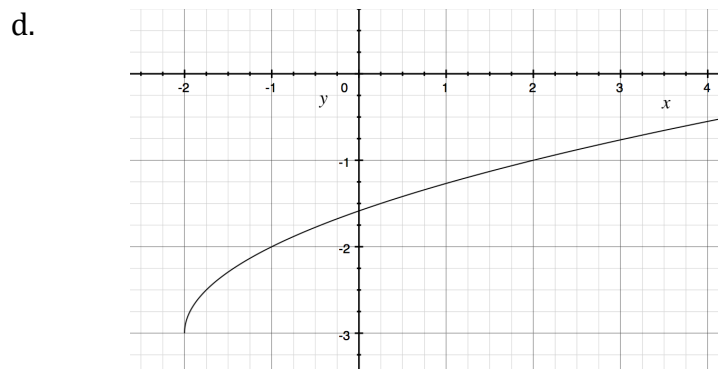
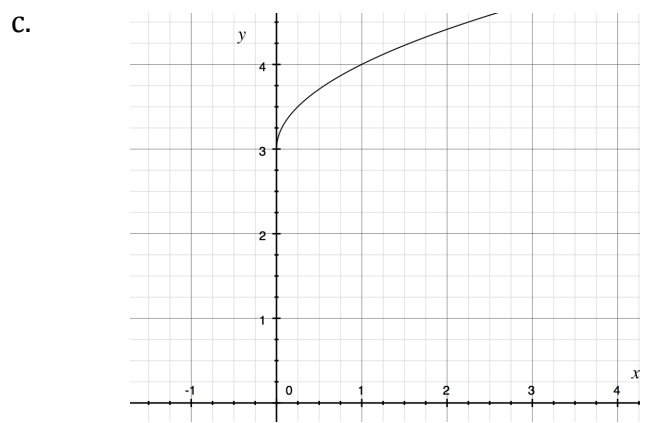
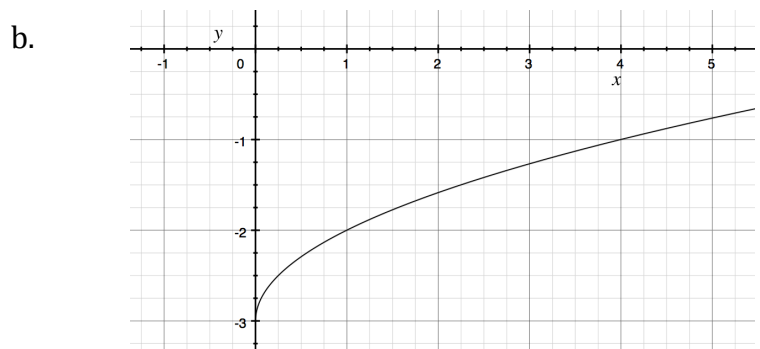
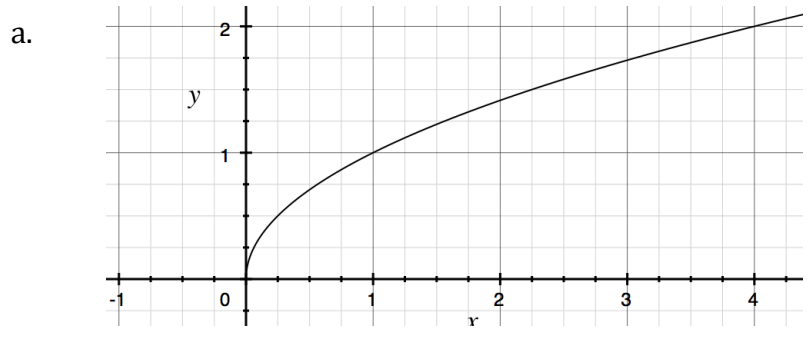
(A.APR.3)

14. The area of a rectangle is $2x^2 + x - 6$. If the width is $x + 2$, what is the length?

- a. $2x + 3$
- b. $-2x - 3$
- c. $2x - 3$
- d. $-2x + 3$

(A.APR.2)

15. Which of the following is a correct graph of the function $f(x) = \sqrt{x+2} - 3$?



(F.IF.7, F.BF.3)