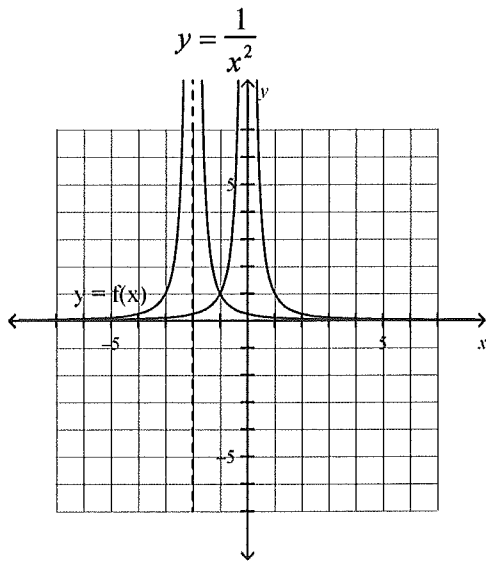


### Transformations Midterm Review Quiz

#### Multiple Choice

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. The graph of  $y = f(x)$  is translated 3 units right and 4 units down. What is the equation of the translation image in terms of the function  $f$ ?
- A.  $y - 3 = f(x + 4)$                       C.  $y + 3 = f(x - 4)$   
 B.  $y + 4 = f(x - 3)$                       D.  $y - 4 = f(x + 3)$
- \_\_\_\_\_ 2. The function  $y = f(x)$  has domain  $-3 \leq x \leq 2$  and range  $-2 \leq y \leq 2$ . What are the domain and range of  $y - 3 = f(x + 5)$ ?
- A. domain:  $-8 \leq x \leq -3$                       C. domain:  $-8 \leq x \leq -3$   
 range:  $1 \leq y \leq 5$                                   range:  $2 \leq y \leq 5$   
 B. domain:  $0 \leq x \leq 5$                           D. domain:  $0 \leq x \leq 5$   
 range:  $2 \leq y \leq 5$                                   range:  $1 \leq y \leq 5$
- \_\_\_\_\_ 3. The graph of  $y = f(x)$  is the image of the graph of  $y = \frac{1}{x^2}$  after a single translation. What is an equation of the image graph?



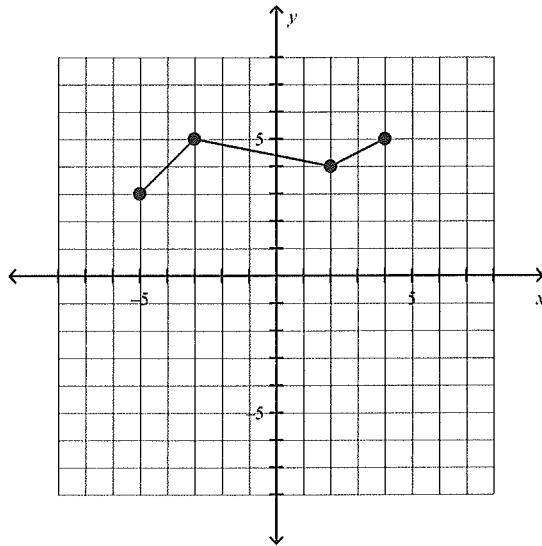
- A.  $y = \frac{1}{(x + 2)^2}$                                       C.  $y - 2 = \frac{1}{x^2}$   
 B.  $y = \frac{1}{x^2} - 2$                                       D.  $y = \frac{1}{(x - 2)^2}$

- \_\_\_\_\_ 4. What is an equation for the image of  $y = \frac{x-2}{x^2}$  after a reflection of its graph in the  $x$ -axis followed by a reflection in the  $y$ -axis?
- A.  $y = -\left(\frac{-x+2}{(-x)^2}\right)$                       C.  $y = \frac{x+2}{-x^2}$
- B.  $y = \frac{x^2}{-x-2}$                       D.  $y = -\left(\frac{-x-2}{(-x)^2}\right)$
- \_\_\_\_\_ 5. The graph of  $y = f(x)$  is compressed horizontally by a factor of  $\frac{1}{2}$ , and reflected in the  $y$ -axis. What is the equation of the image graph in terms of the function  $f$ ?
- A.  $y = -\frac{1}{2}f(x)$                       C.  $y = f(-2x)$
- B.  $y = f(-\frac{1}{2}x)$                       D.  $y = -2f(x)$
- \_\_\_\_\_ 6. The point A (16,64) lies on the graph of  $y = \sqrt{x^3}$ . What are the coordinates of its image A' on the graph of  $y = \frac{1}{4}\sqrt{(2x)^3}$ ?
- A. (8,16)                      C. (4,16)
- B. (8,32)                      D. Not enough information is given.
- \_\_\_\_\_ 7. The graph of  $y = f(x)$  is horizontally compressed by a factor of  $\frac{1}{3}$ , vertically compressed by a factor of  $\frac{1}{2}$ , and reflected in the  $y$ -axis. What is an equation of the image graph in terms of the function  $f$ ?
- A.  $y = \frac{1}{2}f(-3x)$                       C.  $y - \frac{1}{2} = f(x-3)$
- B.  $y - 3 = f(x - \frac{1}{2})$                       D.  $y = -3f(\frac{1}{2}x)$

8. Which statement below describes how the graph of  $y + 2 = -2\sqrt{x - 3}$  is related to the graph of  $y = \sqrt{x}$ ?

- A. The graph of  $y = \sqrt{x}$  is vertically stretched by a factor of 2, reflected in the x-axis, then translated 3 units right and 2 units down.
- B. The graph of  $y = \sqrt{x}$  is horizontally stretched by a factor of 2, not reflected, then translated 2 units right and 3 units down.
- C. The graph of  $y = \sqrt{x}$  is vertically compressed by a factor of  $\frac{1}{2}$ , reflected in the x-axis, then translated 2 units right and 3 units down.
- D. The graph of  $y = \sqrt{x}$  is horizontally compressed by a factor of  $\frac{1}{2}$ , not reflected, then translated 3 units right and 2 units down.

9. Here is the graph of  $y = f(x)$ . What are the domain and range of its inverse?



- A. Domain:  $-5 \leq x \leq 4$   
Range:  $-5 \leq y \leq -3$
- B. Domain:  $3 \leq x \leq 5$   
Range:  $-5 \leq y \leq 4$
- C. Domain:  $-5 \leq x \leq 4$   
Range:  $3 \leq y \leq 5$
- D. Domain:  $3 \leq x \leq 5$   
Range:  $-4 \leq y \leq 5$

10. Determine an equation of the inverse of the function  $y = \frac{-5x + 2}{4}$ .

- A.  $y = \frac{4x - 2}{-5}$
- B.  $y = \frac{4x + 2}{-5}$
- C.  $y = \frac{-5x - 2}{4}$
- D.  $y = \frac{-5x + 4}{2}$

## Transformations Midterm Review Quiz

### Answer Section

#### MULTIPLE CHOICE

1. ANS: B                      PTS: 1                      DIF: Easy                      REF: 3.1 Translating Graphs of Functions  
     LOC: 12.RF2                TOP: Relations and Functions  
     KEY: Conceptual Understanding | Procedural Knowledge
2. ANS: A                      PTS: 1                      DIF: Moderate                REF: 3.1 Translating Graphs of Functions  
     LOC: 12.RF2                TOP: Relations and Functions  
     KEY: Conceptual Understanding | Procedural Knowledge
3. ANS: A                      PTS: 1                      DIF: Easy                      REF: 3.1 Translating Graphs of Functions  
     LOC: 12.RF2                TOP: Relations and Functions  
     KEY: Conceptual Understanding | Procedural Knowledge
4. ANS: D                      PTS: 1                      DIF: Easy                      REF: 3.2 Reflecting Graphs of Functions  
     LOC: 12.RF5                TOP: Relations and Functions                KEY: Conceptual Understanding
5. ANS: C                      PTS: 1                      DIF: Moderate  
     REF: 3.3 Stretching and Compressing Graphs of Functions                LOC: 12.RF3  
     TOP: Relations and Functions                KEY: Conceptual Understanding | Procedural Knowledge
6. ANS: A                      PTS: 1                      DIF: Moderate  
     REF: 3.3 Stretching and Compressing Graphs of Functions                LOC: 12.RF3 | 12.RF13  
     TOP: Relations and Functions                KEY: Conceptual Understanding | Procedural Knowledge
7. ANS: A                      PTS: 1                      DIF: Moderate  
     REF: 3.4 Combining Transformations of Functions                                LOC: 12.RF4  
     TOP: Relations and Functions                KEY: Conceptual Understanding | Procedural Knowledge
8. ANS: A                      PTS: 1                      DIF: Moderate  
     REF: 3.4 Combining Transformations of Functions                                LOC: 12.RF4 | 12.RF13  
     TOP: Relations and Functions                KEY: Conceptual Understanding | Procedural Knowledge
9. ANS: B                      PTS: 1                      DIF: Easy                      REF: 3.5 Inverse Relations  
     LOC: 12.RF5 | 12.RF6                                TOP: Relations and Functions  
     KEY: Conceptual Understanding | Procedural Knowledge
10. ANS: A                      PTS: 1                      DIF: Moderate                REF: 3.5 Inverse Relations  
     LOC: 12.RF5 | 12.RF6                                TOP: Relations and Functions  
     KEY: Conceptual Understanding | Procedural Knowledge