

# Chapter 6 Review

Write the letter for the correct answer in the blank at the right of each question.

1. Find  $(f \cdot g)(x)$  for  $f(x) = 3x^2$  and  $g(x) = 5 - x$ .

- A  $3x^2 - x + 5$                       C  $3x^2 - 15x^2$   
 B  $75 - 30x + 3x^2$                   D  $15x^2 - 3x^3$

1. \_\_\_\_\_

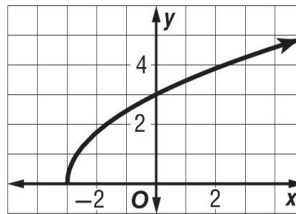
2. If  $f(x) = x^2 + 1$ , and  $g(x) = x - 2$ , find  $[f \circ g](x)$ .

- F  $x^2 - 4x + 5$                       H  $x^2 - 1$   
 G  $x^2 - 3$                               J  $x^3 - 2x^2 + x - 2$

2. \_\_\_\_\_

3. State the domain and range of the function graphed at the right.

- A  $D = \{x \mid x > -3\}, R = \{y \mid y > 0\}$   
 B  $D = \{x \mid x > -3\}, R = \{y \mid y < 0\}$   
 C  $D = \{x \mid x \geq -3\}, R = \{y \mid y \geq 0\}$   
 D  $D = \{x \mid x \geq -3\}, R = \{y \mid y > 0\}$



3. \_\_\_\_\_

4. Find the inverse of  $f(x) = 2x - 7$ .

- F  $f^{-1}(x) = 7x - 2$                       H  $f^{-1}(x) = \frac{1}{2}x + 7$   
 G  $f^{-1}(x) = \frac{x+7}{2}$                       J  $f^{-1}(x) = x + \frac{7}{2}$

4. \_\_\_\_\_

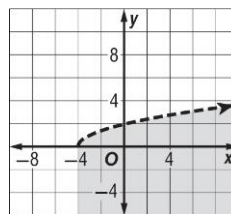
5. Determine which pair of functions are inverse functions.

- A  $f(x) = 3x - 1$     B  $f(x) = 2x - 5$     C  $f(x) = 2x + 2$     D  $f(x) = 3x - 8$   
 $g(x) = \frac{1}{3x-1}$      $g(x) = \frac{x+5}{2}$      $g(x) = 2x - 2$      $g(x) = \frac{1}{3}x + 8$

5. \_\_\_\_\_

6. Which inequality is graphed at the right?

- F  $y \leq \sqrt{x - 4}$                       H  $y < \sqrt{x + 4}$   
 G  $y \geq \sqrt{x + 4}$                       J  $y > \sqrt{x - 4}$



6. \_\_\_\_\_

7. Simplify  $\sqrt{64n^6w^4}$ .

- A  $8|n^3|w^2$                       B  $8n^6w^4$                       C  $\pm 8n^3w^2$                       D  $32|n^3|w^2$

7. \_\_\_\_\_

8. Use a calculator to approximate  $\sqrt[3]{257}$  to three decimal places.

- F 6.357                      G 4.004                      H 16.031                      J 6.358

8. \_\_\_\_\_

9. Simplify  $\sqrt[3]{625x^5}$ .

- A  $-25\sqrt[3]{x}$                       B  $25x^2$                       C  $5x\sqrt[3]{5x^2}$                       D  $-5x\sqrt[3]{5x}$

9. \_\_\_\_\_

10. Simplify  $\sqrt{5} + \sqrt{20} - \sqrt{27} + \sqrt{147}$ .

- F  $5\sqrt{3} + 6$                       G  $3\sqrt{5} + 4\sqrt{3}$                       H  $3\sqrt{5} + 10\sqrt{3}$                       J  $2\sqrt{5} - 3\sqrt{3}$

10. \_\_\_\_\_

11. Simplify  $\frac{6}{4 + \sqrt{2}}$  11. \_\_\_\_\_

**A**  $\frac{12 + 6\sqrt{2}}{7}$       **B**  $\frac{4 - \sqrt{2}}{2}$       **C**  $\frac{4 - \sqrt{2}}{3}$       **D**  $\frac{12 + 6\sqrt{2}}{7}$

12. Write the radical  $\sqrt[6]{y^4}$  using rational exponents. 12. \_\_\_\_\_

**F**  $y^{\frac{4}{6}}$       **G**  $y^{\frac{3}{2}}$       **H**  $y^{\frac{2}{3}}$       **J**  $y^{24}$

13. Simplify the expression  $\frac{m^{\frac{3}{2}}}{m^{\frac{5}{4}}}$  13. \_\_\_\_\_

**A**  $m^{\frac{7}{4}}$       **B**  $m^{-\frac{1}{2}}$       **C**  $m^{\frac{15}{7}}$       **D**  $m^{\frac{3}{8}}$

14. A correct step in the solution of the equation  $(2m + 1)^{\frac{1}{4}} - 2 = 1$  is \_\_\_\_\_. 14. \_\_\_\_\_

**F**  $(2m + 1) - 16 = 1$       **H**  $2m + 1 = 81$

**G**  $(2m + 1)^{\frac{1}{4}} = 1$       **J**  $2m + 1 = 3^{\frac{1}{4}}$

15. Solve  $\sqrt{2x + 4} + 1 \geq 5$ . 15. \_\_\_\_\_

**A**  $x \geq 0$       **B**  $x \leq -2$       **C**  $-2 \leq x \leq 6$       **D**  $x \geq 6$

16. When inflation causes the price of an item to increase, the new cost  $C$  and the original cost  $c$  are related by the formula  $C = c(1 + r)^n$ , where  $r$  is the rate of inflation per year as a decimal and  $n$  is the number of years. What would be the price of a \$2000 item after six months of 5% inflation? 16. \_\_\_\_\_

**F** \$2449.49      **G** \$2680.19      **H** \$22,781.25      **J** \$2049.39

17. The velocity  $V$  of an object can be defined as  $v = \sqrt{\frac{2K}{m}}$ , where  $m$  is the mass of an object and  $K$  is the kinetic energy. Find the velocity of an object with a mass of 11 grams and a kinetic energy of 550. 17. \_\_\_\_\_

**A** 100 m/s      **B** 50 m/s      **C** 15 m/s      **D** 10 m/s

18. Find the area of a circle whose radius is  $2x^{\frac{1}{2}}z^{\frac{2}{3}}$  feet. Use 3.14 for  $\pi$ . 18. \_\_\_\_\_

**F**  $12.56x^{\frac{2}{3}}z^{\frac{4}{3}}$  ft<sup>2</sup>      **H**  $6.28x^{\frac{2}{3}}z^{\frac{4}{3}}$  ft<sup>2</sup>

**G**  $6.28x^{\frac{1}{3}}z^{\frac{4}{3}}$  ft<sup>2</sup>      **J**  $12.56x^{\frac{2}{3}}z^{\frac{4}{3}}$  ft<sup>2</sup>

19. If  $x$  is a positive number, then  $\sqrt[5]{x^3} \cdot x^{\frac{3}{5}} = ?$  19. \_\_\_\_\_

**A** 1      **B**  $\frac{1}{3}x$       **C**  $x^1$       **D**  $\frac{1}{5}$

20. The approximate time  $t$  in seconds that it takes an object to fall a distance of  $d$  feet is given by  $t = \sqrt{\frac{d}{16}}$ . How far will the object fall in 6 seconds? 20. \_\_\_\_\_

**F** 36 ft      **G** 96 ft      **H** 576 ft      **J** 9216 ft