

# Chapter 5 Review

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

1. Simplify  $(3a^0b^2)(2a^3b^2)^2$ .  
 A  $12a^6b^6$       B  $36a^6b^8$       C  $6b^8$       D  $12ab^6$       1. \_\_\_\_\_

2. Simplify  $\frac{4a^4b^2c}{12a^2b^5c^3}$ . Assume that no variable equals 0.  
 F  $\frac{a^2b^3}{8c^2}$       G  $\frac{a^2b^3}{3c^2}$       H  $\frac{a^2c^2}{3b^3}$       J  $\frac{a^2}{3b^3c^2}$       2. \_\_\_\_\_

3. Max is simplifying the expression  $(2x^5 - 5x^3)(x^4 + 3x^2 - 4)$ . Which of the following shows the correct product?  
 A  $2x^9 - x^7 + 23x^5 - 20x^3$       C  $2x^9 - x^7 + 23x^5 - 20x^3$   
 B  $2x^{20} - 6x^{10} + 8x^5 + 5x^{12} + 15x^6 - 20x^3$       D  $2x^9 + x^7 - 23x^5 + 20x^3$       3. \_\_\_\_\_

4. Simplify  $(3a^3 - 7a^2 + a) - (6a^3 - 4a^2 - 8)$ .  
 F  $-3a^6 - 3a^4 + a + 8$       H  $-3a^3 - 11a^2 + a - 8$   
 G  $-3a^6 - 11a^4 + a - 8$       J  $-3a^3 - 3a^2 + a + 8$       4. \_\_\_\_\_

5. Simplify  $(7m - 8)^2$ .  
 A  $49m^2 + 64$       C  $49m^2 - 112m + 64$   
 B  $49m^2 - 64$       D  $49m^2 - 30m + 64$       5. \_\_\_\_\_

6. Simplify  $(4x^3 - 2x^2 + 8x + 8) \div (2x + 1)$ .  
 F  $2x^2 - 2x + 5 + \frac{3}{2x+1}$       H  $2x^2 + 4 - \frac{9}{2x+1}$   
 G  $2x^2 + 4 - \frac{12}{2x+1}$       J  $x^2 - 4x + 6 - \frac{14}{2x+1}$       6. \_\_\_\_\_

7. Which represents the correct synthetic division of  $(2x^3 - 5x + 40) \div (x + 3)$ ?  
 A  $\begin{array}{r|rrrr} -3 & 2 & -5 & 40 & \\ & & -6 & 33 & \\ \hline & 2 & -11 & 73 & \end{array}$       C  $\begin{array}{r|rrrr} -3 & 2 & 0 & -5 & 40 & \\ & & -6 & 18 & -39 & \\ \hline & 2 & -6 & 13 & 1 & \end{array}$   
 B  $\begin{array}{r|rrrr} 3 & 2 & -5 & 40 & \\ & & 6 & 3 & \\ \hline & 2 & 1 & 43 & \end{array}$       D  $\begin{array}{r|rrrr} 3 & 2 & 0 & -5 & 40 & \\ & & 6 & 18 & 39 & \\ \hline & 2 & 6 & 13 & 79 & \end{array}$       7. \_\_\_\_\_

8. Factor  $y^3 - 64$  completely.  
~~F  $(y - 4)^3$~~       ~~H  $(y - 4)(y^2 + 4y + 16)$~~   
~~G  $(y - 4)(y + 4)^2$~~       ~~J  $(y - 4)(y^2 - 4y + 16)$~~       8. \_\_\_\_\_

9. Find  $p(-4)$  if  $p(x) = 3x^3 - 2x^2 + 6x - 4$ .  
 A -252      B -140      C 132      D 180      9. \_\_\_\_\_

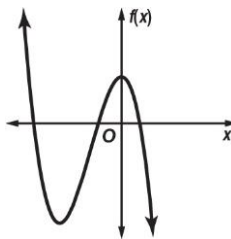
10. If  $r(x) = x^3 - 2x + 1$ , find  $r(2a^3)$ .

- F**  $8a^6 - 4a^3 + 1$     **G**  $4a^6 + 4a^3 + 1$     **H**  $6a^6 - 4a^3 + 1$     **J**  $8a^9 - 4a^3 + 1$

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

11. State the number of real zeros for the function whose graph is shown at the right.

- A** 0                      **C** 3  
**B** 2                      **D** 1

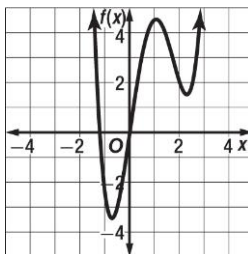


11. \_\_\_\_\_

For Questions 12 and 13, use the graph shown.

12. Determine the values of  $x$  between which a real zero is located.

- F** between 1 and 2                      **H** between  $-4$  and  $-3$   
**G** between  $-2$  and  $-1$                       **J** between 2 and 3



12. \_\_\_\_\_

13. Estimate the  $x$ -coordinate at which a relative maximum occurs.

- A** 1                      **B**  $-1$                       **C** 2                      **D**  $-2$

13. \_\_\_\_\_

14. Write the expression  $10x^8 - 6x^4 - 20$  in quadratic form, if possible.

- ~~**F**  $10(x^4)^2 - 6(x^2)^2 - 20$~~     ~~**H**  $10(x^4)^2 - 6(x^4) - 20$~~   
~~**G**  $10(x^2)^4 - 6(x^2)^2 - 20$~~     ~~**J** not possible~~

14. \_\_\_\_\_

15. Solve  $x^4 - 6x^2 - 27 = 0$ .

- A**  $\sqrt{3}, 3, 3i, i\sqrt{3}$                       **C**  $-3, 3, i\sqrt{3}, -i\sqrt{3}$   
**B**  $-3, -\sqrt{3}, \sqrt{3}, 3$                       **D**  $-\sqrt{3}, 3, 3i, -3i$

15. \_\_\_\_\_

16. Use substitution to find  $f(-2)$  for  $f(x) = 2x^4 - 3x^3 + x^2 - x + 5$ .

- F** 15                      **G** 67                      **H** 63                      **J** 19

16. \_\_\_\_\_

17. One factor of  $x^3 - 3x^2 - 4x + 12$  is  $x + 2$ . Find the remaining factors.

- A**  $x + 2, x + 3$                       **B**  $x + 2, x - 3$                       **C**  $x - 2, x + 3$                       **D**  $x - 2, x - 3$

17. \_\_\_\_\_

18. Which describes the number and type of roots of the equation  $x^4 - 64 = 0$ ?

- F** 2 real roots, 2 imaginary roots                      **H** 4 real roots  
**G** 3 real roots, 1 imaginary root                      **J** 4 imaginary roots

18. \_\_\_\_\_

19. State the possible number of imaginary zeros of  $f(x) = 7x^3 - x^2 + 10x - 4$ .

- A** exactly 1                      **B** exactly 3                      **C** 3 or 1                      **D** 2 or 0

19. \_\_\_\_\_