CHAPTER 6

Mid-Chapter Quiz

Lessons 6-1 through 6-5

Simplify. Assume that no variable equals 0. (Lesson 6-1)

1. $(-3x^2y)^3(2x)^2$ **2.** $\dfrac{a^6b^{-2}c}{a^3b^2c^4}$ **3.** $\left(\dfrac{x^2z}{xz^4}\right)^2$

4. CHEMISTRY One gram of water contains about 3.34×10^{22} molecules. About how many molecules are in 5×10^2 grams of water? (Lesson 6-1)

Simplify. (Lesson 6-2)

5. $(9x + 2y) - (7x - 3y)$ **6.** $(t + 2)(3t - 4)$

7. $(n + 2)(n^2 - 3n + 1)$ **8.** $4a(ab + 5a^2)$

9. MULTIPLE CHOICE The area of the base of a rectangular suitcase measures $3x^2 + 5x - 4$ square units. The height of the suitcase measures $2x$ units. Which polynomial expression represents the volume of the suitcase? (Lesson 6-2)

A $3x^3 + 5x^2 - 4x$

B $6x^2 + 10x - 8$

C $6x^3 + 10x^2 - 8x$

D $3x^3 + 10x^2 - 4$

Simplify. (Lesson 6-3)

10. $(m^3 - 4m^2 - 3m - 7) \div (m - 4)$

11. $\dfrac{2d^3 - d^2 - 9d + 9}{2d - 3}$

12. $(x^3 + x^2 - 13x - 28) \div (x - 4)$

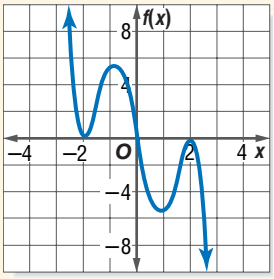
13. $\dfrac{3y^3 + 7y^2 - y - 5}{y + 2}$

14. WOODWORKING Arthur is building a rectangular table with an area of $3x^2 - 17x - 28$ square feet. If the length of the table is $3x + 4$ feet, what should the width of the rectangular table be? (Lesson 6-3)

15. PETS A pet food company estimates that it costs $0.02x^2 + 3x + 250$ dollars to produce x bags of dog food. Find an expression for the average cost per unit. (Lesson 6-3)

16. If $p(x) = 2x^3 - x$, find $p(a - 1)$. (Lesson 6-4)

17. Describe the end behavior of the graph. Then determine whether it represents an odd-degree or an even-degree polynomial function and state the number of real zeroes. (Lesson 6-4)



18. WIND CHILL The function $C(s) = 0.013s^2 - s - 7$ estimates the wind chill temperature $C(s)$ at 0°F for wind speeds s from 5 to 30 miles per hour. Estimate the wind chill temperature at 0°F if the wind speed is 27 miles per hour. (Lesson 6-4)

19. The formula $L(t) = \dfrac{8t^2}{\pi^2}$ represents the swing of a pendulum. L is the length of the pendulum in feet, and t is the time in seconds to swing back and forth. Find the length of a pendulum $L(t)$ that makes one swing in 2 seconds. (Lesson 6-4)

20. MULTIPLE CHOICE The function $f(x) = x^2 - 4x + 3$ has a relative minimum located at which of the following x-values? (Lesson 6-5)

F -2 **H** 3

G 2 **J** 4

21. Graph $y = x^3 + 2x^2 - 4x - 6$. Estimate the x-coordinates at which the relative maxima and relative minima occur. (Lesson 6-5)

22. MARKET PRICE Prices of oranges from January to August can be modeled by (1, 2.7), (2, 4.4), (3, 4.9), (4, 5.5), (5, 4.3), (6, 5.3), (7, 3.5), (8, 3.9). How many turning points would the graph of a polynomial function through these points have? Describe them. (Lesson 6-5)