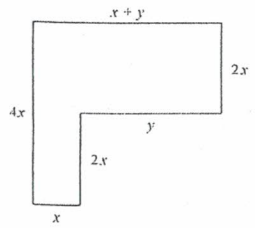
Name: _____ Class: _____ Date: _____ ID: C

Math 2 Unit 1 Test Review

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

____ 1. Find the perimeter of the figure. Simplify the answer.



a. $9x + 2y$ b. $9x + 3y$ c. $10x + y$ d. $10x + 2y$

Simplify the given expression.

____ 2. $\left(11x^2 + 7x + 11\right) + \left(9x^2 - 17x - 4\right)$

a. $20x^2 + 16x + 7$ c. $20x^2 + 24x + 15$
b. $28x^2 - 10x + 7$ d. $20x^2 - 10x + 7$

____ 3. $\left(-5x^2 - 6x + 16\right) - \left(16x^2 + 20x - 7\right)$

a. $-21x^2 - 22x + 9$ c. $-21x^2 - 26x + 9$
b. $-21x^2 - 14x + 23$ d. $-21x^2 - 26x + 23$

____ 4. $9a^3(3ab^3 - 4a^2b^2 + 9a^3b)$

a. $27a^4b^3 - 36a^5b^2 + 81a^6b$ c. $27a^4b^3 - 36a^2b^2 + 81a^3b^3$
b. $27x^2y^4 - 36x^2y^2 + 9x^2y^3$ d. $27a^4b^3 - 36a^5b^2 + 81a^6b^3$

Simplify the given expression. Assume that no variable equals 0.

____ 5. $\left(20x^{-8}y^7\right)\left(-7xy^5\right)$

a. $-140x^{-9}y^{-64}$ c. $\dfrac{13y^{12}}{x^7}$
b. $-140x^{-7}y^{12}$ d. $\dfrac{-140y^{12}}{x^7}$

____ 6. $\left(\dfrac{36x^{24}y^8}{18x^{12}y^{16}}\right)^2$

a. $4x^{24}y^{-16}$ c. $\dfrac{4x^{12}}{y^8}$
b. $2x^{12}y^{16}$ d. $\dfrac{4x^{24}}{y^{16}}$

____ 7. Write the expression $(x + 2)(x - 5)$ as a polynomial in standard form.

a. $x^2 - 3x - 10$ c. $x^2 - 7x - 3$
b. $x^2 + 7x - 10$ d. $x^2 + 7x - 7$

Factor the polynomial completely.

____ 8. $9x^4y - 18x^2y^2$

a. $9x^2\left(x^2y - 2y^2\right)$ c. $x^2y\left(9x^2 - 18y\right)$
b. $9\left(x^4y - 2x^2y^2\right)$ d. $9x^2y\left(x^2 - 2y\right)$

____ 9. $42x^3 - 70x^2 + 57x - 95$

a. $14x^2(3x - 5) - 57x + 95$ c. $(42x^3 - 70x^2) + (57x - 95)$
b. $14x^2(3x - 5) - 19(3x - 5)$ d. $(14x^2 + 19)(3x - 5)$

____ 10. $9x^2 - 23x + 10$

a. $9x^2 - 17x - 6x + 10$ c. $9x(x - 2) - 5(x - 2)$
b. $9x^2 - 18x - 5x + 10$ d. $(9x - 5)(x - 2)$

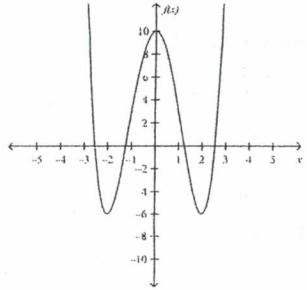
____ 11. $6x^2 + 5x - 6$

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

For the given graph,

a. *describe the end behavior,*
b. *determine whether it represents an odd-degree or even-degree polynomial function, and*
c. *state the number of real zeros.*

____ 12.



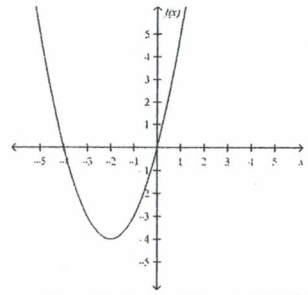
a. The end behavior of the graph is $f(x) \to +\infty$ as $x \to +\infty$ and $f(x) \to -\infty$ as $x \to -\infty$.
It is an even-degree polynomial function.
The function has four real zeros.

b. The end behavior of the graph is $f(x) \to +\infty$ as $x \to +\infty$ and $f(x) \to +\infty$ as $x \to -\infty$.
It is an odd-degree polynomial function.
The function has four real zeros.

c. The end behavior of the graph is $f(x) \to +\infty$ as $x \to +\infty$ and $f(x) \to +\infty$ as $x \to -\infty$.
It is an even-degree polynomial function.
The function has four real zeros.

d. The end behavior of the graph is $f(x) \to +\infty$ as $x \to +\infty$ and $f(x) \to +\infty$ as $x \to -\infty$.
It is an even-degree polynomial function.
The function has five real zeros.

____ 13.



a. The end behavior of the graph is $f(x) \to +\infty$ as $x \to +\infty$ and $f(x) \to -\infty$ as $x \to -\infty$.
It is an even-degree polynomial function.
The function has two real zeros.

b. The end behavior of the graph is $f(x) \to +\infty$ as $x \to +\infty$ and $f(x) \to +\infty$ as $x \to -\infty$.
It is an even-degree polynomial function.
The function has three real zeros.

c. The end behavior of the graph is $f(x) \to +\infty$ as $x \to +\infty$ and $f(x) \to +\infty$ as $x \to -\infty$.
It is an even-degree polynomial function.
The function has two real zeros.

d. The end behavior of the graph is $f(x) \to +\infty$ as $x \to +\infty$ and $f(x) \to +\infty$ as $x \to -\infty$.
It is an odd-degree polynomial function.
The function has two real zeros.

Determine whether y varies directly with x. If so, find the constant of variation k and write the equation.

____ 14.

x	y
3	15
12	60
48	240
192	960

a. yes; $k = 5$; $y = 5x$
b. yes; $k = 4$; $y = 4x$
c. yes; $k = 3$; $y = 3x$
d. no

_____ 15. The range of a car is the distance R in miles that a car can travel on a full tank of gas. The range varies directly with the capacity of the gas tank C in gallons.

a. Find the constant of variation for a car whose range is 315 mi with a gas tank that holds 21 gal.

b. Write an equation to model the relationship between the range and the capacity of the gas tank.

a. 15 mi/gal; $R = 15C$
b. 15 mi/gal; $C = 15R$
c. $\frac{1}{15}$ mi/gal; $R = \frac{1}{15}C$
d. 6615 mi/gal; $RC = 6615$

_____ 16. Which of the following is a factor of $x^2 - 6x - 16$?

a. $x - 4$
b. $x - 8$
c. $x - 16$
d. $x - 2$
e. $x + 4$

_____ 17. Suppose that y is inversely proportional to x with constant of proportionality $k = 3.6$. What is the value of x when $y = 9$?

a. $x = 2.5$
b. $x = -5.4$
c. $x = 12.6$
d. $x = 0.4$
e. $x = 32.4$

_____ 18. The amount of the Brown's water bill A is directly proportional to the number of gallons of water g used during the month with constant of proportionality k. Which of the following equations correctly expresses this relationship?

a. $Ag = k$
b. $A = g + k$
c. $A = kg$
d. $A = \frac{k}{g}$
e. $A = \frac{g}{k}$

Short Answer

19. Rewrite each of these quadratic expressions in equivalent standard form.

a. $(x - 8)(x + 8)$

b. $(2x + 7)(x + 3)$

c. $(x + 3)^2$

d. $(x - 4)(x + 11)$

20. Write each quadratic expression in equivalent factored form.

a. $x^2 + 2x - 35$

b. $x^2 - 8x + 16$

c. $2x^2 + 16x + 30$

d. $3x^2 - 22x + 7$

21. The time required to complete a 100-mile bike race is inversely proportional to the average speed that the rider maintains.

a. Write a rule that expresses the relationship between average speed s and race time t.

b. What is the constant of proportionality for this situation?

c. Tina took 5 hours and 15 minutes to complete the race. What was her average speed?

d. Gregory maintained an average speed of 16 miles per hour. How long did it take him to complete the race?