1. Which of the following is a factored form of the expression $5x^2 - 13x - 6$?

    a. $(x - 3)(5x + 2)$
    b. $(x - 2)(5x - 3)$
    c. $(x - 2)(5x + 3)$
    d. $(x + 2)(5x - 3)$
    e. $(x + 3)(5x - 2)$

2. What is the complete factorization of the polynomial $4x^3 - 24x^2 + 36x$?

    a. $4x(x - 3)^2$
    b. $x(2x - 6)^2$
    c. $x(4x - 12)(x - 3)$
    d. $x(4x^2 - 24x + 36)$
    e. $4x(x^2 - 6x + 9)$

3. For which nonnegative value of x is the expression $\dfrac{1}{9 - x^2}$ undefined?

    a. 81
    b. 18
    c. 9
    d. 3
    e. 0

4. If x is any number other than 4 and 5, then $\dfrac{(4 - x)(x - 5)}{(x - 4)(x - 5)} = ?$

    a. -20
    b. -1
    c. 0
    d. 1
    e. 20

5. For all $a \neq -2$, $\dfrac{a^2 - 4}{2a + 4} = ?$

    a. a
    b. $\frac{a-1}{3}$
    c. $a - 1$
    d. $\frac{a}{2}$
    e. $\frac{a-2}{2}$

6. For all $x \neq -4$, which of the following is equivalent to the expression below?

$$\frac{x^2 + 12x + 32}{x + 4}$$

    a. $x + 3$
    b. $x + 8$
    c. $x + 11$
    d. $x + 16$
    e. $x + 28$

7. What is the lowest common denominator of the fractions $\dfrac{5}{4x^2 y}$, $\dfrac{-4}{15xy^2}$?

    a. xy
    b. $30xy$
    c. $60xy$
    d. $360x^2 y^2$
    e. $60x^2 y^2$

8. If $2x^2 + x - 15 = 0$, what are the two possible values for x?

    a. -5 and $\frac{3}{2}$
    b. -3 and $\frac{2}{5}$
    c. -3 and $\frac{5}{2}$
    d. $-\frac{5}{2}$ and 3
    e. $-\frac{3}{2}$ and 5

9. Which set of numbers contains both solutions to the equation $x^2 - x = 6$?

    a. {-5, -4, -2, 3, 5}
    b. {-5, -2, -1, 1, 4}
    c. {-4, -3, 2, 4, 5}
    d. {-4, -1, 1, 2, 5}
    e. {-3, -1, 0, 2, 3}

10. Which is the fully simplified form of the expression $\dfrac{x^2 + 9}{x^2 - 9} + \dfrac{3}{x + 3}$?

    a. $\frac{x+6}{x+3}$
    b. $\frac{x^2+6}{x^2-9}$
    c. $\frac{x}{x+3}$
    d. $\frac{x}{x-3}$
    e. $\frac{x-6}{x-3}$

11. If $2x^2 + 6x = 36$, what are the possible values of x?

    a. -12 and 3
    b.   -6 and 3
    c.   -3 and 6
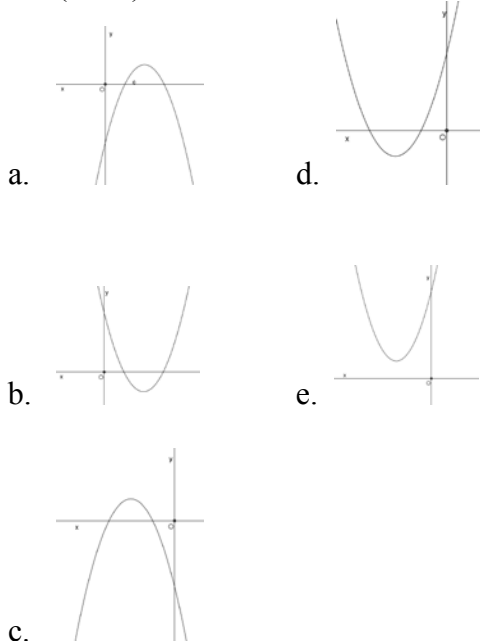   d.   -3 and 12
    e.   12 and 15

12. If $x^2 + 6x + 3 = 0$, what are the possible values of x?

    a. $-6 \pm \sqrt{6}$
    b. $-3 \pm \sqrt{6}$
    c. $3 \pm \sqrt{6}$
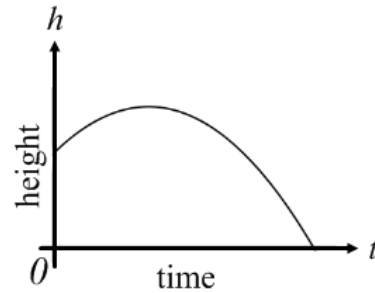   d. $6 \pm \sqrt{6}$
    e. $4 \pm \sqrt{6}$

13. In the (x, y) coordinate plane, if the point $(-4, 2)$ is on the graph of $y = ax^2$, what is the value of a?

    a. -1
    b. 1
    c. $-\dfrac{1}{2}$
    d. $-\dfrac{1}{8}$
    e. $\dfrac{1}{8}$

14. Which of the following shows the graph of $y = -(x + 2)^2 + 1$?

a.

d.

b.

e.

c.

15. The graph of the equation $h = -at^2 + bt + c$, which describes how the height, h, of a hit baseball changes over time, t, is shown below.

If you alter only this equation's c term, which gives the height at time $t = 0$, the alteration has an effect on which of the following?

    I.   The h-intercept
    II.   The maximum value f h
    III. The t-intercept

    a. I only
    b. II only
    c. III only
    d. I and III only
    e. I, II, and III

16. What is the simplified form of the algebraic fraction $\dfrac{(x-y)^2}{y^2 - x^2}$?

    a. 1
    b. −1
    c. $2xy$
    d. $\dfrac{y-x}{y+x}$
    e. $\dfrac{x-y}{x+y}$

17. Which of the following is NOT a solution of $(x-3)(x-1)(x+3)(x+7) = 0$?

    a. -7
    b. -3
    c. 1
    d. 3
    e. 7

ANSWERS: 1.) A 2.) A 3.) D 4.) B 5.) E 6.) B 7.) E 8.) C 9.) A 10.) D 11.) B 12.) B 13.) E 14.) C 15.) E 16.) D 17.) E