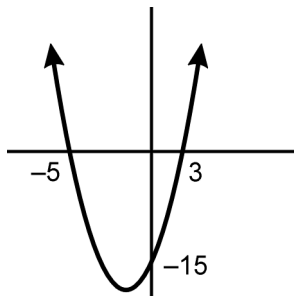**Name:** _____ **Date:** _____
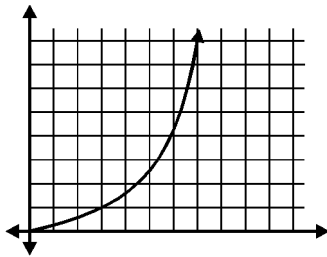
1. The graph of $f(x)$ is shown here:

If $f(x) = ax^2 + bx + c$, what is $f(x)$ in factored form?

A. $f(x) = (x - 5)(x + 3)$

B. $f(x) = -(x + 5)(x - 3)$
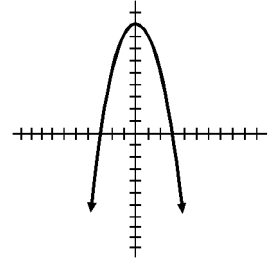
C. $f(x) = -(x - 5)(x + 3)$

D. $f(x) = (x + 5)(x - 3)$

2. Which of these is a reasonable equation for the graph?

A. $f(x) = \frac{1}{3}x$ B. $f(x) = \frac{1}{3}x^2$

C. $f(x) = 3x^2 + 5$ D. $f(x) = 3x + 5$

3. Which of these is a reasonable equation for the graph?

A. $f(x) = \frac{1}{2}x$

B. $f(x) = -\frac{1}{2}x^2$

C. $f(x) = -x^2 + 9$

D. $f(x) = 2x + 9$

4. Which of these could be the equation of the graph?

A. $y = -2(x - 3)^2 + 7$

B. $y = -2(x + 3)^2 + 7$

C. $y = -2(x + 3)^2 - 7$

D. $y = -2(x - 3)^2 - 7$
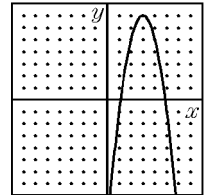
5. What is the equation of the graph below?

A. $y = 2(x + 4)^2 - 2$

B. $y = \frac{1}{2}(x + 4)^2 - 2$

C. $y = 2(x - 4)^2 - 2$

D. $y = 2(x + 4)^2 + 4$

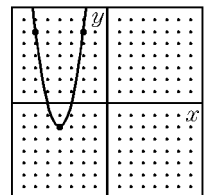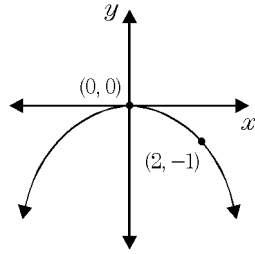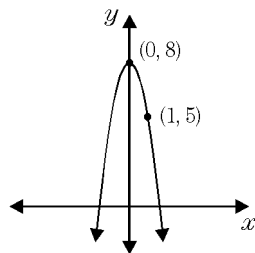6. What is the equation of the given parabola?

   A. $y = -4x^2$

   B. $y = -2x^2$

   C. $y = -\frac{1}{2}x^2$

   D. $y = -\frac{1}{4}x^2$

(0, 0)
(2, −1)

7. What is the equation of the given parabola?

   A. $y = -3x^2 + 8$

   B. $y = -\frac{1}{3}x^2 + 8$

   C. $y = -3x^2 - 8$

   D. $y = 3x^2 - 8$

(0, 8)
(1, 5)

8. Which equation corresponds to the values in this table?

x	y
−3	5
−2	0
−1	−3
0	−4
1	−3

   A. $y = 4 - x$ B. $y = 4 - x^2$

   C. $y = x^2 - 4$ D. $y = -2x - 1$

9. When the equation $y = 2(x - 4)^2 + 5$ is re-written in standard form, $y = ax^2 + bx + c$, what is the value of b?

   A. −16   B. 0   C. −8   D. 16

10. By graphing the quadratic function $f(x) = 8 + 2x - x^2$, find the x- and y-intercepts.

    A. x: −4, 2; y: 8   B. x: −2, 4; y: 8

    C. x: 8; y: −4, 2   D. x: −1, 2; y: 8

11. Determine all the zeros of the function $y = 3x^2 - 2x - 2$.

    A. $\frac{1 \pm \sqrt{7}}{3}$ B. $\frac{-1 \pm \sqrt{3}}{3}$

    C. $\frac{1 \pm \sqrt{5}}{3}$ D. no real zeros exist

12. Which of the following are the zeros of the function $f(x) = 5x^2 - 13x - 6$?

    A. $x = -3, \frac{2}{5}$ B. $x = 3, \frac{5}{2}$

    C. $x = 3, -\frac{2}{5}$ D. no real zeros exist

13. Graph $y = x^2 + 6x - 4$. For what *approximate* values of x is $y = 0$?

    A. −6 and 0   B. −6.6 and 0.6

    C. 0.7 and 2.1   D. 0.7 and 4.2

14. What is the equation of a quadratic function that has zeros −3 and 6?

    A. $f(x) = x^2 + 9x + 18$ B. $f(x) = x^2 - 9x - 18$

    C. $f(x) = x^2 + 3x + 18$ D. $f(x) = x^2 - 3x - 18$

15. If the roots of the quadratic equation $Ax^2 + Bx + C = 0$ are $x = -3$ and $x = 7$, then what is the equation?

    A. $x^2 + 4x - 21 = 0$ B. $x^2 - 4x + 21 = 0$

    C. $x^2 + 4x + 21 = 0$ D. $x^2 - 4x - 21 = 0$

16. Determine the vertex of the parabola $x = -2y^2 + 12y - 10$.

    A. $(8, 3)$ B. $(19, 9)$

    C. $(28, 3)$ D. $(28, 9)$

17. An equation of the axis of symmetry of the graph of the equation $y = 2x^2 + 6x - 5$ is:

    A. $x = -\frac{3}{2}$ B. $x = -3$

    C. $y = -\frac{3}{2}$ D. $y = -3$

18. Simplify: $(k^{n+2})^3$

    A. k^{n+5} B. k^{n+6} C. k^{3n+6} D. k^{6n+6}

19. Simplify: $gh^3(g^{2m} - 3g^m h^{2m} - h^{3m})$

    A. $g^{2m}h^3 - 3g^m h^{6m} - gh^{9m}$

    B. $g^{3m}h^3 - 3g^{2m}h^{5m} - gh^{6m}$

    C. $g^{2m}h^{6m} - 3g^m h^{6m} - gh^{9m}$
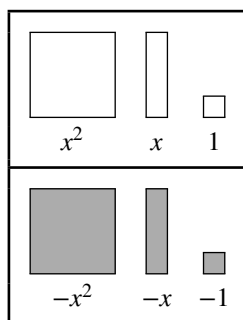
    D. $g^{2m+1}h^3 - 3g^{m+1}h^{2m+3} - gh^{3m+3}$

20. $\dfrac{x^a}{x^b}$ is equivalent to which expression?

    A. x^{a-b} B. x^{ab} C. $x^{\frac{a}{b}}$ D. x^{b-a}

21. Simplify: $(j^a - k^{7b})^2$

    A. $j^{2a} - 2j^a k^{7b} + k^{49b}$ B. $j^{2a} - 2j^a k^{7b} + k^{14b}$

    C. $j^{2a} + k^{14b}$ D. $j^{2a} + k^{49b}$

22. Use this key to answer the following question(s).

The modeled form of $x^2 + 4x + 4$ is shown here:
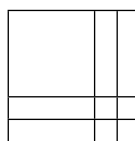
What are the factors?

    A. $(x - 2)(x + 2)$ B. $(x - 2)^2$

    C. $(x + 2)^2$ D. $(x^2 + 2x)^2$

23. When factored correctly, $x^2 - 25 = $ _____ .

    A. $(x - 5)^2$ B. $(x + 5)^2$

    C. $(x + 5)^{-2}$ D. $(x - 5)(x + 5)$

24. Factor: $r^2 - 36$

    A. $(r+6)(r-6)$ B. $(r+2)(r-18)$

    C. $(r-18)(r-2)$ D. $(r-6)^2$

25. Factor: $12y^2 + 3y - 9$

    A. $3(4y-3)(y+1)$ B. $(4y-3)(3y+3)$

    C. $(6y-9)(y+1)$ D. $(6y+9)(y-1)$

26. Find one factor of: $2x^2 - 5x - 12$

    A. $(x+4)$ B. $(x-3)$

    C. $(x-4)$ D. $(x+3)$

27. Factor completely: $12x^2 + 5xy - 28y^2$. Then, identify one of the following as an incomplete version of the correctly factored form.

    A. $(\quad)(3x+\quad)$ B. $(4x+\quad)(\quad)$

    C. $(\quad-7y)(\quad)$ D. $(\quad)(\quad-14y)$

28. Solve: $d(6d - 18) = 0$

    A. 0 or 3   B. 6 or -3

    C. d or 3   D. d or -6 or 3

29. Solve: $3x^2 + 2x + 3 = 4$

    A. 4, 3   B. $-\frac{1}{3}$, 1

    C. -1, $\frac{1}{3}$ D. -1, -3

30. Solve: $12x^2 - 3 = 5x$

    A. $\left\{-\frac{1}{3}, \frac{3}{4}\right\}$ B. $\left\{-\frac{3}{2}, 1\right\}$

    C. $\left\{-3, \frac{4}{3}\right\}$ D. $\{\pm 13\}$

31. Solve: $x^2 = 5x - 6$

    A. $\{-6, 1\}$ B. $\{-2, -3\}$

    C. $\{-1, 6\}$ D. $\{2, 3\}$

32. For which equation is the sum of the roots equal to $\frac{4}{3}$?

    A. $3x^2 + 4x + 5 = 0$ B. $x^2 - 7x + 12 = 0$

    C. $3x^2 - 4x + 5 = 0$ D. $x^2 + x + \frac{4}{3} = 0$

33. The roots of the equation $3x^2 - 7x + 4 = 0$ are:

    A. real, rational, equal

    B. real, rational, unequal

    C. real, irrational, unequal

    D. imaginary

34. The roots of the equation $x^2 + 2x + 2 = 0$ are:

    A. real, rational, equal

    B. real, irrational, unequal

    C. real, rational, unequal

    D. imaginary

35. The height of a baseball related to the time it is in the air can be modeled by the equation

$$h(t) = -16t^2 + v_o t + h_o.$$

In the equation, v_o is the upward velocity (in feet per second) of the ball when $t = 0$, and h_o is the ball's height (in feet) when $t = 0$.

A certain baseball was hit at a height of $3\frac{1}{2}$ feet with an initial upward velocity of 74 feet per second. How long did the ball remain in the air?

A. about $3\frac{2}{3}$ seconds   B. about 4 seconds

C. about $4\frac{1}{2}$ seconds   D. about $5\frac{1}{6}$ seconds

36. The Orpheum Theater seats 600 people. Lately, the theater has been filled every night. The owner wants to raise the price, which is now $5, but he knows with higher prices he will lose customers. He uses the following equation to estimate how much in dollars, y, he will make if he raises the price by x dollars.

$$y = 3000 + 350x - 50x^2$$

If the owner wants to make $3500, what is the least amount he can raise the price of tickets?

A. $3.00   B. $5.00   C. $2.00   D. $2.50

CCM2 Unit 2 NC Final Exam Review   12/20/2013

1.
Answer: D
Objective: F.IF.08A

2.
Answer: B
Objective: F.IF.08A

3.
Answer: C
Objective: F.IF.08A

4.
Answer: A
Objective: F.IF.08A

5.
Answer: A
Objective: F.IF.08A

6.
Answer: D
Objective: F.IF.08A

7.
Answer: A
Objective: F.IF.08A

8.
Answer: C
Objective: F.IF.08A

9.
Answer: A
Objective: F.IF.08A

10.
Answer: B
Objective: F.IF.08A

11.
Answer: A
Objective: F.IF.08A

12.
Answer: C
Objective: F.IF.08A

13.
Answer: B
Objective: F.IF.08A

14.
Answer: D
Objective: F.IF.08A

15.
Answer: D
Objective: F.IF.08A

16.
Answer: A
Objective: F.IF.08A

17.
Answer: A
Objective: F.IF.08A

18.
Answer: C
Objective: A.SSE.03C

19.
Answer: D
Objective: A.SSE.03C

20.
Answer: A
Objective: A.SSE.03C

21.
Answer: B
Objective: A.SSE.03C

22.
Answer: C
Objective: A.SSE.03A

23.
Answer: D
Objective: A.SSE.03A

24.
Answer: A
Objective: A.SSE.03A

25.
Answer: A
Objective: A.SSE.03A

26.
Answer: C
Objective: A.SSE.03A

27.
Answer: B
Objective: A.SSE.03A

28.
Answer: A
Objective: A.REI.04B

29.
Answer: C
Objective: A.REI.04B

30.
Answer: A
Objective: A.REI.04B

31.
Answer: D
Objective: A.REI.04B

32.
Answer: C
Objective: A.REI.04B

33.
Answer: B
Objective: A.REI.04B

34.
Answer: D
Objective: A.REI.04B

35.
Answer: C
Objective: A.REI.04B

36.
Answer: C
Objective: A.REI.04B