Massive Review Math III Quadratics Unit

1. Convert to vertex form:$f(x) = -3x^2 - 6x - 5$

2. Identify the vertex:$f(x) = -3x^2 - 12x + 11$

3. Identify the vertex:$f(x) = -(x + 3)^2 + 6$

4. What is the equation for the axis of symmetry:$f(x) = (x - 7)^2 - 9$

5. What is the equation for the axis of symmetry:$f(x) = -(x + 3)^2 + 6$

6. What is the domain of the function:$f(x) = -(x + 3)^2 + 6$

7. What is the range of the function:$f(x) = -(x + 3)^2 + 6$

8. What is the domain of the function: :$f(x) = (x - 7)^2 - 9$

9. What is the range of the function: :$f(x) = (x - 7)^2 - 9$

10. What are the transformations from the parent function: $f(x) = -(x + 3)^2 + 6$

11. What are the transformations from the parent function$f(x) = x^2$:$f(x) = -2(x + 5)^2 - 3$

12. What are the transformations from the parent function$f(x) = x^2$: $f(x) = \frac{2}{3}(x - 2)^2 + 1$

13. What are the transformations from the parent function$f(x) = x^2$: $f(x) = x^2 - 7$

14. The function $f(x) = -(x + 3)^2 + 6$ undergoes the following transformations $\{-shift\ left\ 2; -shift\ down\ 2\}$. What is the resulting equation for the function?

15. The function $f(x) = \frac{2}{3}(x - 2)^2 + 1$ undergoes the following transformations$\{-shift\ left\ 5; -shift\ down\ 3 - reflect\ across\ x - axis\}$. What is the resulting equation for the function?

16. The function $f(x) = x^2 - 5$ undergoes the following Transformations $\{-shift\ right\ 8;\ -shift\ up\ 6\}$. What is the resulting equation for the function?

17. Solve by factoring: $2x^2 - 15x + 18 = 0$

18. Solve by factoring: $x^2 = -7x - 10$

19. Solve by factoring: $x^2 - 9x - 36 = 0$

20. Solve by factoring: $4x^2 = 81$

21. Simplify: $2(2 - 5i)^2 + (4 + 3i)$

22. Simplify: $(2 + 5i)(2 - 5i)$

23. Simplify: $4(12 - 7i) - 9(10 + 3i)$

24. Simplify: $-8(3 + 2i) + 2(4 - 5i)$

25. Simplify: $\frac{4+i}{5-6i}$

26. Simplify: $(12 + 13i)(8 - 7i)$

Find the value of c that makes each trinomial a perfect square. Then write the trinomial as a perfect square.

1. $x^2 - 10x + c$ **2.** $x^2 + 60x + c$ **3.** $x^2 - 3x + c$

a. Find the value of the discriminant.
b. Describe the number and type of roots.
c. Find the exact solutions by using the Quadratic Formula.

1. $p^2 + 12p = -4$ **2.** $9x^2 - 6x + 1 = 0$ **3.** $2x^2 - 7x - 4 = 0$

. Suppose you are tossing an apple up to a friend on a third-story balcony. After t seconds, the height of the apple in feet is given by $h = -16t^2 + 38.4t + 0.96$. Your friend catches the apple just as it reaches its highest point. How long does the apple take to reach your friend, and at what height above the ground does your friend catch it?

. The barber's profit p each week depends on his charge c per haircut. It is modeled by the equation $p = -200c^2 + 2400c - 4700$. Sketch the graph of the equation. What price should he charge for the largest profit?

. A skating rink manager finds that revenue R based on an hourly fee F for skating is represented by the function $R = -480F^2 + 3120F$. What hourly fee will produce maximum revenues?

. The path of a baseball after it has been hit is modeled by the function $h = -0.0032d^2 + d + 3$, where h is the height in feet of the baseball and d is the distance in feet the baseball is from home plate. What is the maximum height reached by the baseball? How far is the baseball from home plate when it reaches it's maximum height?

A lighting fixture manufacturer has daily production costs of $C = 0.25n^2 - 10n + 800$, where C is the total daily cost in dollars and n is the number of light fixtures produced. How many fixtures should be produced to yield a minimum cost?

Solve each equation by completing the square.

7. $y^2 - 4y - 5 = 0$ **8.** $x^2 - 8x - 65 = 0$ **9.** $s^2 - 10s + 21 = 0$