Math II
Chapter 4 Review

Name_____
Date_____Period_____

1. What is the vertex of $f(x) = 2(x + 3)^2 + 5$?

2. What are the x-intercepts of $f(x) = -2(x + 5)(x - 3)$?

3. Given $f(x) = ax^2 + bx + c$, what does the $x = -b/2a$ represent? Could it be more than one thing?

4. Factor the following equations completely.
   a. $2x^3 - 16x^2 + 24x$
   b. $12x^2 + 19x - 18$
   c. $x^2 - 13x + 30$
   d. $4n^2 - 49$
   e. $2x^2 + 7x - 15$
   f. $6t^2 + 23t + 20$
   g. $4x^2 - 16x$

5. How do you convert a quadratic equation that is given in intercept form to standard form?

6. How do you convert a quadratic equation that is given in standard form to vertex form?

7. Solve $3(m - 4)^2 = 24$

8. Solve $(x + 2)^2 - 12 = 36$

9. Solve $5(x - 2)^2 + 40 = 0$

10. Solve the following equations.
    a. $x^2 + 12x - 45 = 0$
    b. $2w^2 + 13w - 7 = 0$
    c. $10y^2 + 11y - 6 = 0$

11. Write the equation $y = 2x^2 + 12x + 5$ in vertex form.
$y = a(x - h)^2 + k$

12. Write the quadratic function that has a vertex at (2, 7) and passes through (4, 2).

13. Write the quadratic function that has a vertex at (-3, -2) and passes through (1, -10)

14. Write the equation of a parabola that has x-intercepts of -3 and 2 and passes through the point (3, 12)

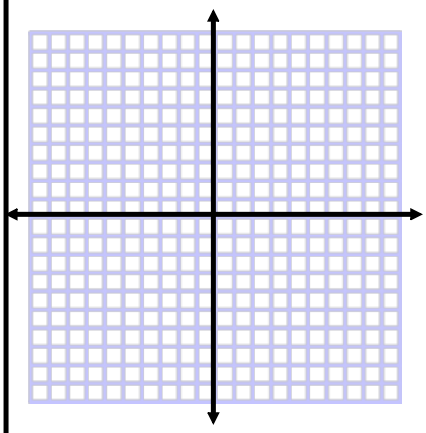
15. Write the equation of a parabola that has x-intercepts of -7 and -3 and passes through the point (-1, 12)

16. Use the discriminant to describe the types of solutions for the equation $-3x^2 - 3x + 9 = -4x + 1$.

17. Solve: $5x^2 + 11 = 14$

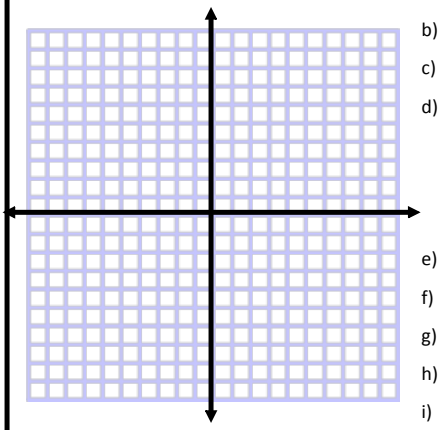
Graph the following quadratics: (show work)

18. $y = 2x^2 + 12x + 15$



a) Graph
b) vertex: (,)
c) axis of symmetry: x =
d) x-intercept:(exact value)
e) y-intercept:
f) domain:
g) range:
h) increasing and decreasing
i) end behavior

19. $y = -(x - 3)^2 + 8$



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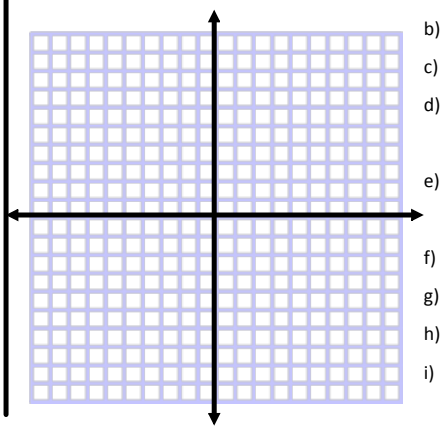
20. $y = (x + 6)(x - 2)$



a) Graph
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21. Solve for x three times: by factoring completely, by completing the square and by the quadratic formula

$$x^2 - 10x + 16 = 0$$

Factoring	completing the square	quadratic formula

22. Solve for x three times: by factoring completely, by completing the square, and by the quadratic formula

$$2x^2 + 8x - 10 = 0$$

Factoring	completing the square	quadratic formula

23. If a toy rocket is launched vertically upward from ground level with an initial velocity of 128 feet per second, then its height *h* after *t* seconds is given by the equation $h(t) = -16t^2 + 128t$ (if air resistance is neglected).

a. How long will it take for the rocket to return to the ground?

b. After how many seconds will the rocket be 112 feet above the ground?

c. How long will it take the rocket to reach its maximum height?

d. What is the maximum height?

24. The function $y = -0.03(x-14)^2 + 6$ models the jump of a red kangaroo where x is the horizontal distance in feet and y is the corresponding height in feet.

a) What is the kangaroo's maximum height?

b) How far does the kangaroo jump?

25. Multiply $(6 - i)(-2 - 3i)$

26. Find the quotient.

a. $\frac{2 + i}{3 - 4i}$

b. $\frac{3 + i}{2 - 3i}$