Unit 2 Test 2 Review - Quadratic Equations

1. When solving the equation $x^2 - 8x - 7 = 0$ by completing the square, which equation is a step in the process?

a. $(x-4)^2 = 9$

X2-8X+16=7+16

 $(x-4)^2 = 23$

d. $(x-8)^2=23$

2. Solve the following system of equations for

 $y = 2x^2 - 3$ and y = 2x + 1

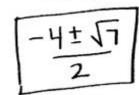
- Fred's teacher gave the class the quadratic function $f(x) = 4x^2 + 16x + 9.$
 - a) State two different methods Fred could use to solve the equation f(x) = 0.

3 complete 1

2) factor (4) quadratic formula

b) Use the quadratic formula to solve the equation.

1



 Write a standard form quadratic equation that has zeros at -5 and 4. (X+5)(X-4)

 $y = \chi^2 - 4x + 5x - 20$ $y = \chi^2 + \chi - 20$

- 5. Consider the quadratic function $f(x) = x^2 + 6x 4$.
 - Rewrite the function rule in vertex form.

b. Determine the coordinates of the maximum or minimum point of the graph of this function.

(-3,-13) MIN

c. Solve the equation $x^2 + 6x - 4 = 0$.

$$X = \frac{-6 \pm \sqrt{52}}{2}$$

$$X = -6 \pm 2\sqrt{3}$$

6. Solve the following quadratic equations using the given method.

a.
$$x^{2} + 6x + 38 = 13$$

(Completing the Square)
 $x^{2} + 6x + 38 = 13$
 $x^{2} + 6x + 38 = 13$

$$(x+3)^2 = -16$$

 $x+3 = \pm 46$
 $x = -3 \pm 46$

c.
$$2x^{2}-9x+10=0$$
(Factoring)
$$2x^{2}-5x^{2}-4x+10$$

$$x(2x-5)-2(2x-5)$$

$$(2x-5)(x-2)=0$$

$$\frac{5}{2}$$

7. Solve the equation
$$x^2 - 14x = -40$$

$$X^2 - 14x + 40 = 0$$

$$(x-4)(x-10) = 0$$

8. Write the quadratic function $f(x) = (x-2)^2 + 4$ in standard form. Then describe the transformations from the parent function.

b.
$$5x^{2} - 7x + 13 = 10$$
(Quadratic Formula)
$$X = \frac{-(-7) \pm \sqrt{(-7)^{2} - 4(5)(13)}}{2(5)}$$

$$X = \frac{7 \pm \sqrt{-211}}{2(5)} = \frac{7 \pm i\sqrt{211}}{10}$$

d.
$$x^2 - 64 = 0$$

(Factoring)
 $(x+8)(x-8) = 0$
 $\sqrt{8}$

- 9. Find the zeros of the function $f(x) = 2x^2 4x 6$ $2(x^2 2x 3)$ 2(x 3)(x + 1)

Solve:

11. Where does the graph of $x^2 - 6x + 8$ cross the x-axis?

$$\frac{10^{-10} \text{ Calc}}{10^{-10} \text{ Calc}}$$
 or algebra
 $\frac{10^{-10} \text{ Calc}}{10^{-10} \text{ Calc}}$ or algebra
 $\frac{10^{-10} \text{ Calc}}{10^{-10} \text{ Calc}}$ or algebra
 $\frac{10^{-10} \text{ Calc}}{10^{-10} \text{ Calc}}$ (x-4)(x-2)
 $\frac{10^{-10} \text{ Calc}}{10^{-10} \text{ Calc}}$ (4,0)
 $\frac{10^{-10} \text{ Calc}}{10^{-10} \text{ Calc}}$ (x-4)(x-2)
 $\frac{10^{-10} \text{ Calc}}{10^{-10} \text{ Calc}}$ (x-4)(x-2)
 $\frac{10^{-10} \text{ Calc}}{10^{-10} \text{ Calc}}$ (x-4)(x-2)
 $\frac{10^{-10} \text{ Calc}}{10^{-10} \text{ Calc}}$ (2,0)

Solve the quadratic equation.

- 12. Factor: $x^2 + 14x + 48$
- 14. Factor: $9x^2 16$ (3×14)(3×-4)

15. Solve using the quadratic formula: $3x^2 + 5x = 11$

$$X = \frac{3X^{2}+5X-11=0}{5^{2}-4(3)(-1)} = \frac{-5\pm\sqrt{15^{2}-4(3)(-1)}}{2(3)} = \frac{-5\pm\sqrt{15^{2}-10}}{6}$$

17. When completing the square, what number would be added to both sides?

$$x^{2} + 2x + \frac{1}{(\frac{2}{2})^{2}} = \frac{1}{1}$$

16. Find a quadratic function that has roots at 7 and -2 and the "a" value is 1. Write your final answer in standard form.

18. Solve the following system of equations: y = x - 4

in calc or algebra

Y=x²

Y=x-4

Y=x²

$$0=x^2-x+4$$

graph

 $x=(-1)\pm\sqrt{(-1)^2-4(1)(4)}$
 $x=1\pm\sqrt{-15}$

Yeal

Inaginary

real

Find a quadratic model for the set of values.

19.
$$(-2, -20), (0, -4), (4, -20)$$
 In Calc! STAT $11 \frac{L_1}{-2} \frac{L_2}{-20}$ STAT \rightarrow Calc.

4 -20 ENT

20. Dalco Manufacturing estimates that its weekly profit, P, in hundreds of dollars, can be approximated by the formula $P = -3x^2 + 6x + 10$, where x is the number of units produced per week, in thousands.

a. How many units should the company produce per week to earn the maximum profit?

max@

b. Find the maximum weekly profit.

\$13

21. Identify the vertex of the function $y = -3(x + 2)^2 + 5$

(-2,5) *inside opposite, outside