Algebra 1 Name_____

QUADRATIC UNIT REVIEW

Date_____ Algebra____

TOPIC 1 : ALGEBRAIC SOLUTIONS TO QUADRATICS:

Solve each equation by factoring. Leave your answers as fractions if need be.

1) $m^2 + m - 42 = 0$

2) $-4r^2 + 5 = -5r^2 + 6r$

3) $6m^2 - 25m = -21$

4) $3r^2 - 15 = 12r$

Solve each equation by completing the square. Round your answers to the nearest THOUSANDTH if needed.

5) $x^2 - 8x - 65 = 0$

6) $n^2 - 14n + 44 = 4$

7) $-97 - 14n = -7n^2$

8) $5x^2 + 18x - 66 = 4x^2$

Solve each equation with the quadratic formula. Round your answers to the thousandth place if needed

9) $-r^2 - 12r - 20 = 0$

10) $3x^2 + 7x - 76 = 0$

11) $7n^2 - 110 = 3n^2 - 10$

12) $3v^2 - 6v - 110 = 2 - 11v$

Find the discriminant of each quadratic equation then state the number and type of solutions.

13) $-4m^2 + 8m - 4 = 0$

14) $-8r^2 + 6r + 5 = 0$

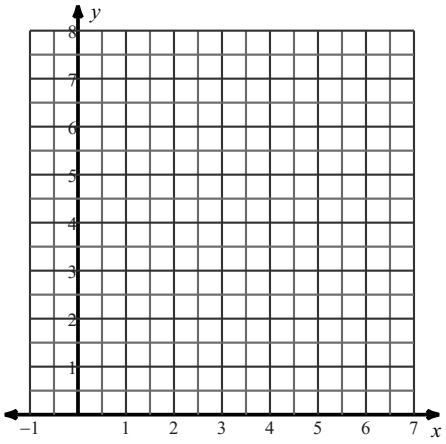
15) $8v^2 + 3v + 4 = -5v$

16) $n^2 + 6n + 6 = n$

TOPIC 2: GRAPHING PARABOLAS AND IDENTIFYING THEIR PARTS

Use your graphing calculator to sketch the graph of the following parabolas and answer the accomanying questions.

17) $y = x^2 - 4x + 7$



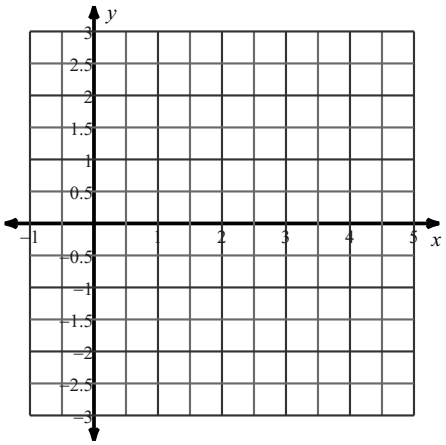
18) Fill in the following for the parabola in number 17:

Vertex:_____

AOS:_____

ROOTS:_____

19) $y = -\frac{1}{2}x^2 + 2x - 1$



20) Fill in the following for the parabola in number 19:

Vertex:_____

AOS:_____

ROOTS:_____

Find the VERTEX, AOS and ROOTS of the following quadratics ALGEBRAICALLY!!!!

21) $y = 2x^2 + 12x + 16$

22) $y = x^2 + 4x + 6$

23) $f(x) = \frac{1}{2}x^2 - 2x + 4$

24) $f(x) = -x^2 + 6x - 5$

TOPIC 3: FUNCTIONS AND MODELING

Answer the following quesitons for the given quadratic.

25) Fill in the blanks for $f(x) = 3x^2 - 6x + 1$

when x=-5, f(x) =_____
when x = 0, f(x) =_____
when x = 14, f(x) = _____

when f(x) = 10, x = _____
when f(x) = -2, x = _____
when f(x) =-5, x = _____

26) Fill in the blanks for $f(x) = -\frac{1}{4}x^2 + 5$

when x=-2, f(x) =_____
when x = 25, f(x) = _____

when f(x) = -11, x = _____
when f(x) = 1, x = _____

Give an example of a fucntion value for which there are no posisble x values:
f(x) =_____

Writing Quadratic Equations

27) The square of a positve number is 24 more than 5 times the number.

a. Write a quadratic equation that represents this situation using *n* = number.

b. Solve your euqation to find the value of the number.

28) Rachel is six years older than her brother, Brian. The product of their ages is 667.

a. Define a variable for this problem:

b. Write a quadratic equation that represents this situation.

c. Solve your euqation and clearly state the ages of both Rachel and Brian.

29) Find two consecutive EVEN integers whose product is 2024.

a. Define a variable for this problem:

b. Write a quadratic equation that represents this situation.

c. Solve your euqation and clearly state the value of the integers.

30) The number of thousands of downlaods of a new song can be modeled by the function: $g(x) = -\frac{1}{4}x^2 + 4x + 1$ where x represents the number of weeks since the song is realed.

a. What is the maximum number of downloads in one week?

b. After how many weeks did the song reach it's maximum download amount?

c. How many times was the song downloaded in week 1:____, Week 2:____, Week 3:___

What was the TOTAL number of downloads from week 1 to week 3?

d. After how many weeks did the song stop getting downloaded?

e. What is the total number of downloads for the song over the whole time?