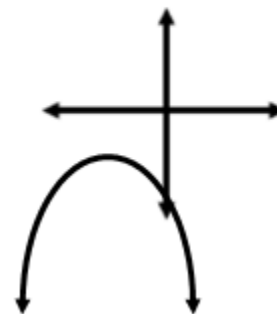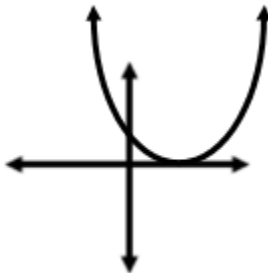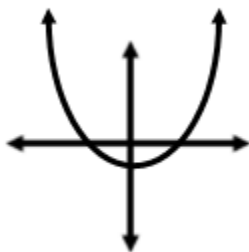Name:_____ Date:_____

Notes
Algebra Section 10.7
Pages 678-683

Goal: "You will use the value of the discriminant"

· What are the possible number of solutions a quadratic equation can have?

Sketch a parabola to represent each possibility.

Discriminant: $b^2 - 4ac$

· What happens to the discriminant in the quadratic formula? It gets square-rooted

Use your knowledge of square roots to determine how you would use the discriminant to identify the number of solutions to a quadratic equation.
If the discriminant is > 0, then there are two solutions
If the discriminant is < 0, there there are no solutions
If the discriminant $= 0$, then there is one solution

Ex: $2x^2 + 6x + 5$ **Ex:** $x^2 - 7 = 0$ **Ex:** $4x^2 - 12x + 9$

Discriminant = –4   Discriminant = 28, 2 solutions   Discriminant = 0
No solutions   2 Solutions   1 solution

Tell whether the following equation has *two solutions*, *one solution*, or *no solution*.

Ex: $3x^2 - 7 = 2x$

2 solutions

Ex: $x^2 + 4x + 3 = 0$

2 Solutions

Ex: $2x^2 - 5x + 6 = 0$

No solution

Ex: $-x^2 + 2x = 1$

1 solution

Ex: $3x^2 + 8x + 7 = 0$

No solution

Ex: $x^2 + 2x - 3 = 0$

2 solutions

Ex: $4x^2 + 20x + 25 = 0$

1 solution

Find the number of *x*-intercepts of the graph of:

Ex: $y = x^2 + 5x + 8$

None

Ex: $y = x^2 + 7x - 2$

2 intercepts

Ex: $y = x^2 + 10x + 25$

1 intercept

Ex: $y = x^2 - 9x$

2 solutions

Ex: $y = -x^2 + 2x - 4$

None

Ex: $y = 4x^2 + 4x + 1$

1 intercept