

BE-1B TUESDAY 1-14-08

$$\text{discriminant} = d = \boxed{b^2 - 4ac}$$

For EACH trinomial, find a , b , and c then find the VALUE OF THE discriminant. If the trinomial can be factored, do so, otherwise write "prime".

① $3x^2 - 7x - 6 = 0$

② $5x^2 - 3x + 15 = 0$

③ $2x^2 - 11x + 15 = 0$

For THE trinomials THAT can be factored, WHAT is the solution of the corresponding quadratic equation?

$$ax^2 + bx + c = 0$$

Find the discriminant:

① $x^2 - 9x + 14 = 0$

② $x^2 - 6 = -5x$

③ $15a^2 - 60a = 0$

Two other meanings for the discriminant:

① $d = \text{NEGATIVE}$ *STOP* THIS
 QUADRATIC EQUATION
 HAS NO SOLUTION

② $d = \text{positive but NOT A perfect SQUARE}$ THE QUADRATIC EQUATION HAS 2 SOLUTIONS but you cannot find them by factoring.

Summary: solving $ax^2+bx+c=0$

discriminant

$$b^2-4ac$$

MEANING

* $\oplus$ perfect square

Trinomial can be factored.
Solution is 2 rational numbers.

$\oplus$ NOT perfect square

Trinomial is prime.
Solution is 2 irrational numbers.

$\ominus$

Quadratic Equation
HAS NO SOLUTION
(NO real number solution)

* Special Perfect Square = 0

Trinomial can be factored.
Solution is technically 2 rational numbers but they are the same number.

(EX) $x^2-6x+9=0$

$$a=1$$

$$b^2-4ac$$

$$b=-6$$

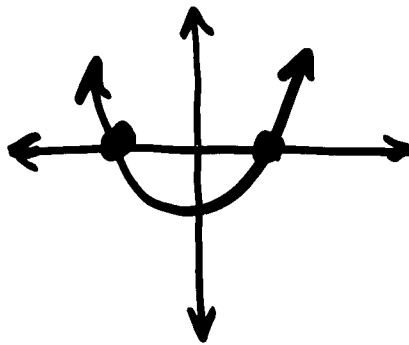
$$36-36=0$$

$$c=9$$

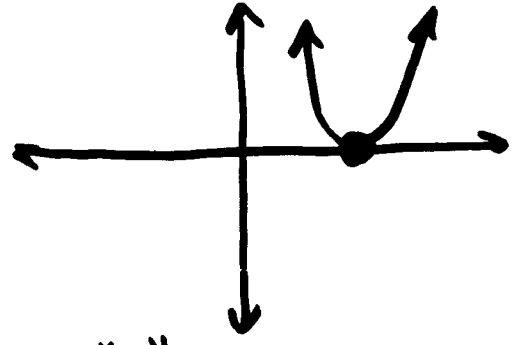
(EX) $(x-3)(x-3)=0$

$$x=3, 3$$

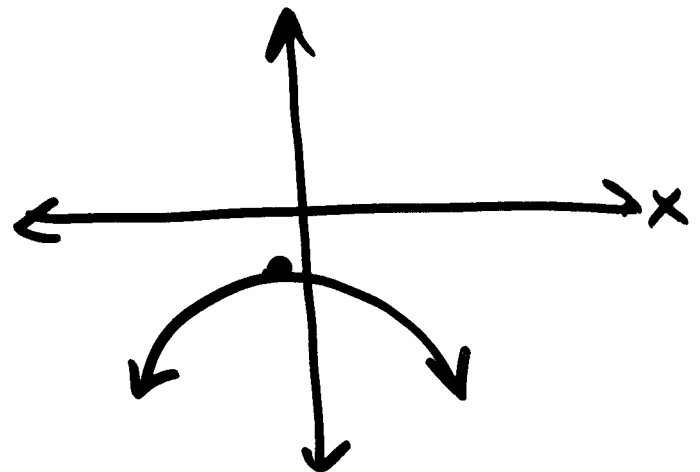
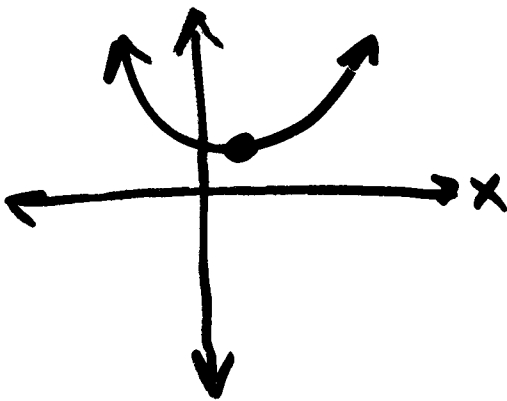
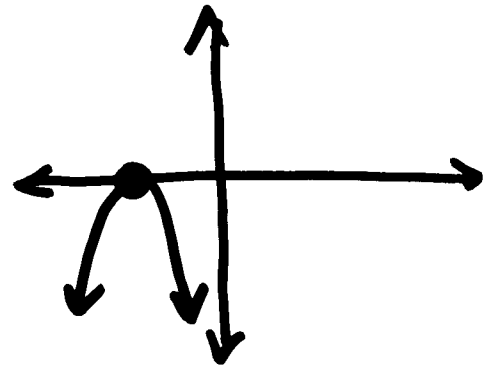
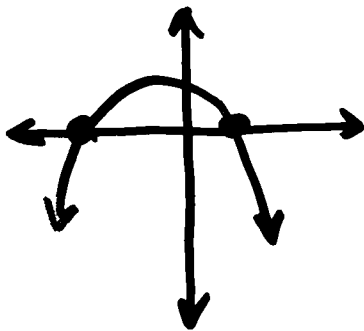
Physical meaning of 1, 2, or no solution:



2 SOLUTIONS
 $b^2 - 4ac$ is $\oplus$



"1" SOLUTION
 $b^2 - 4ac$ is zero



* NO SOLUTION

$b^2 - 4ac$ is negative

* PARABOLA NEVER CROSSES THE X-AXIS

Homework: do not try to solve

Pg 550 # 14 to 20

FIND EACH discriminant,
state what this means about
the solution to EACH
quadratic equation.
