Homework: pg. 177 # 1ad, 2bd, 4abc, 5b, 7, 8, 15, pg. 185 #1abde, 2ac, 8

**Solving Quadratic Equations**

There are multiple ways to solve a quadratic equation:

1. Factoring
2. Quadratic Formula: $x=\frac{-b\pm \sqrt{b^{2}-4ac}}{2a}$
3. Graphing

**Example 1**

Solve each equation for x.

a) $x^{2}+x-12=0$ b) $x^{2}+2x-1.25$ = 0

c) $\left(x-2\right)^{2}-4=0$ d) $2x^{2}=x+3$

e) $x^{2}-2x+3=0$ f) $x^{2}-3x+2.25=0$

Notice that a quadratic equation can have zero, one, or two real solutions. We can use the part of the quadratic formula under the square root (the discriminant) to determine how many roots each quadratic equation will yield.

 **discriminant 🡪** $b^{2}-4ac$

If $b^{2}-4ac>0$ 🡪 two real roots

 $b^{2}-4ac=0$ 🡪 one real root

 $b^{2}-4ac<0$ 🡪 no real roots

**Example 2**

For each quadratic equation below, use the discriminant to determine how many real roots they will each possess.

a) $x^{2}-5x+7=0$ b) $2x^{2}+4x+2=0$ c) $3x^{2}=8-x$