

# The 8 Ways with Quadratics: Part I

## I. Guess and Test

In this method, you just guess a starting number and then evaluate the equation, trying to get a True statement.

For the equation:  $3x^2 = 363$   
 Let  $x = 10$   
 $3 * 10^2 = 363$   
 $3 * 100 = 363$   
 $300 = 363$  False ( off by 63)

Keep trying other numbers until you get one of the answers, and then look for the other, if you think their might be one.

## II. The Algebra Way

Use factoring as needed and then apply the steps of solving an equation.

$$\frac{3x^2}{3} = \frac{363}{3}$$

$$x^2 = 121$$

$$x = \pm\sqrt{121}$$

$$x = \pm 11$$

## III. Graph

Place the left side of the equation in  $Y_1$  and the right side in  $Y_2$ .

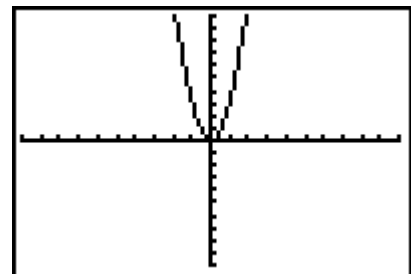
Make sure all the Plots are off and then do **q** as a starting place.

```

Plot1 Plot2 Plot3
\Y1=3X^2
\Y2=363
\Y3=
\Y4=
\Y5=
\Y6=
\Y7=
    
```

```

MEMORY
1:ZBox
2:Zoom In
3:Zoom Out
4:ZDecimal
5:ZSquare
6:ZStandard
7:ZTrig
    
```

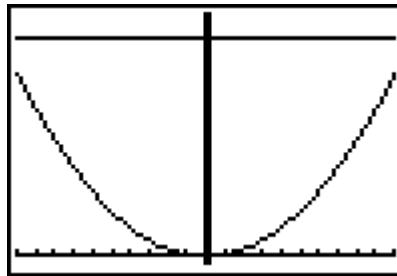


Adjust the **p** until you get the correct view, showing the intersections.

```

WINDOW
Xmin=-10
Xmax=10
Xscl=1
Ymin=-10
Ymax=400
Yscl=1
Xres=1

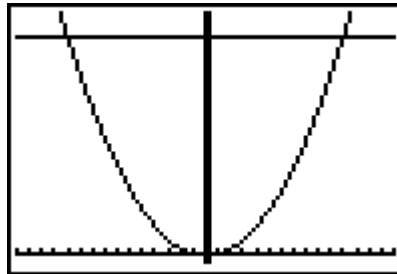
```



```

WINDOW
Xmin=-15
Xmax=15
Xscl=1
Ymin=-10
Ymax=400
Yscl=1
Xres=1

```

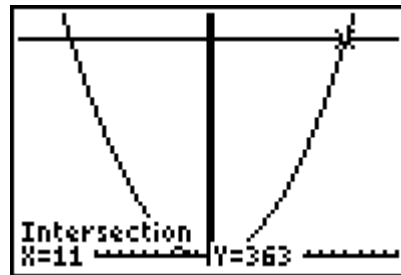
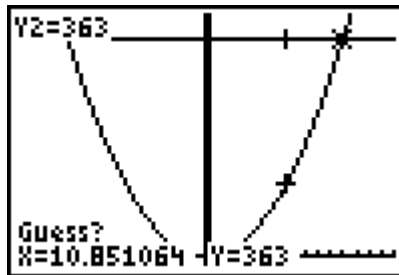
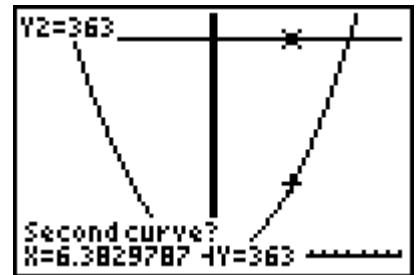
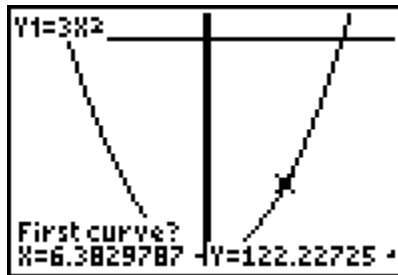


Now request the Intersection by pressing **y** [CALC] and selecting option 5:intersect from the CALCULATE Menu. Identify the required points and report the answers.

```

CALCULATE
1:value
2:zero
3:minimum
4:maximum
5:intersect
6:dy/dx
7:∫f(x)dx

```



Report these values (X and Y) and then repeat for other intersections.