

# Quadratic Regression

Regression:

```

QuadReg
Y=Ax^2+Bx+C
A=2
B=-1.2
C=25

```

L1	L2	L3	Z
24	24	24	24
28	28	28	28
33	33	33	33
41	41	41	41
54	54	54	54
74	74	74	74

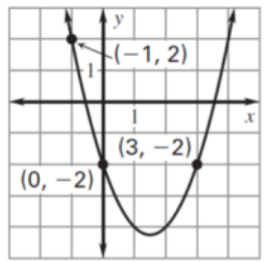
Using the model, how many participants are projected for 2008?

Year, $t$	Participants, $y$
0	24
1	28
2	33
3	41
4	54
5	74

**Youth Football** The following table shows the number of participants,  $y$ , in the local youth football program from 2000 to 2005. Assume that  $t$  is the number of years since 2000.

**Example 3** Use quadratic regression to find the best-fitting quadratic model and make predictions

**Example 1** Write a quadratic function in standard form



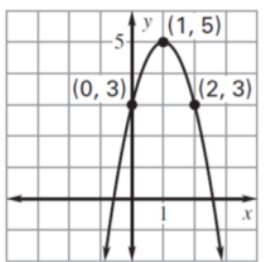
L1	L2	L3	Z
-1	2		
3	-2		
0	-2		

```

QuadReg
Y=Ax^2+Bx+C
A=1
B=-3
C=-2

```

**Graphing Calculator**  
 STAT → Edit  
 Enter x's in L1, y's in L2  
 STAT → Calc → QuadReg



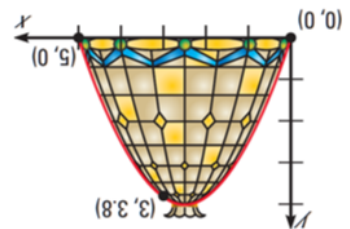
L1	L2	L3	Z
0	3		
2	3		
1	5		

```

QuadReg
Y=Ax^2+Bx+C
A=-1
B=2
C=3

```

A huge tiffany lamp hangs from the top of an elegant stairwell in an old opera house downtown. The base of the shade is 5 feet in diameter. The top is about 3.25 inches above the vertex of the parabola shown in the graph. What is height of the tiffany lamp?



```

QuadReg
Y=Ax^2+Bx+C
A=-.63333333333333
B=3.16666666667
C=0

```

**Example 2** Use quadratic regression to find the best-fitting quadratic model