Exam 1 THIS Friday MARCH 7th  Chapters 0,1,2,3.

In-class exercises:
1. Vocabulary: basic quadratic function
   open up, open down
   vertex
   axis of symmetry
   maximum / minimum value of a quadratic function
   general form of a quadratic function

2. A straight line has slope 2 and y-intercept (0,1). Is the point (-1, -1) on the line?

3. Basic Quadratic Function: f(x)=x^2  Vertical Shift: f(x)= x^2+2  Stretch away from x: f(x)= 2x^2

3. Reflection about x-axis: f(x)=- x^2  Vertical Shift: f(x)= -x^2+2  Squish to x axis f(x)= (1/2)x^2

4. Which of the following quadratic functions have a maximum?

a) ) f(x) = 2x^2 - 3x + 5  b) ) f(x) = -x^2 + 4x - 2  c) ) f(x) = x^2 + 3x - 6
5. Graphing a general quadratic function. Use vertex with x=− \( \frac{b}{2a} \) and y=f(− \( \frac{b}{2a} \))

\[ y = x^2 - 4x + 4 \]

open up or down?

y-intercept

x-intercept

vertex

axis

max or min?

6. Graph the quadratic function: \( y = -x^2 - 2x + 3 \)

open up or down?

y-intercept

x-intercept

vertex

axis

max or min?

7. Graph the function \( f(x) = 2x^2 + 2x + 3 \) and find its range

open up or down?

y-intercept

x-intercept

vertex

axis

max or min?

8. Business application of quadratic function: Suppose demand function is \( p = 1000 - 2q \). Find the level of production that will maximize the total revenue and determine this revenue.

Total Revenue = Price * Quantity

\[ r = pq \]

Can substitute in the Demand equation for p and get a quadratic function r(q).