Hwk: Pg. 294: #1. Does the following table of values model a linear relation? How do you know?

a)

r	C
0	0
5	31.4
2	62.8
3	94.2
4	125.7
5	157.1

#2. Which equations model a linear relation? How do you know?

a) $y = 2x$ b) $y = x^2 + 1$

Quadratic Models

All mathematical models can be represented using

What are the identifying features of a quadratic model?

Table:

Graph:

Equation:

Given a set of data a quadratic regression can be performed todetermine if the best model for the data is quadratic.

Example 1: Which table of values models a quadratic relation? How do you know?

a)

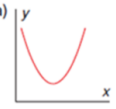
t	c
0	0.5
1	2
2	8
3	32
4	128

b)

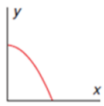
t	c
0	0.5
1	5.5
2	20.5
3	45.5
4	80.5

Example 2: Which graphs might model a quadratic relations? Why do you think so?

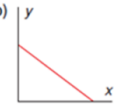
a)



c)



b)



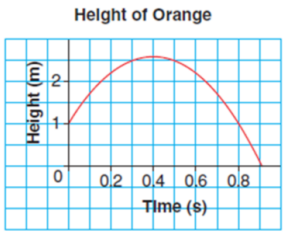
Example 3: Which equations model a quadratic relation? How do you know?

a) $y = -2x$

b) $y = x^2 + 1$

c) $y = 5 - 2x$

Example 4: An orange is tossed straight up in the air.



a) When is the height of the orange increasing? When is it decreasing?

b) When is the height of the orange changing rapidly? When is it changing slowly?

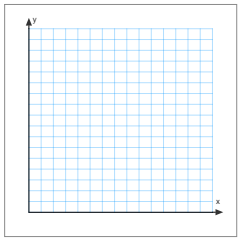
Example 5: The formula for the volume of a cylinder with radius *r* and height *h is:*

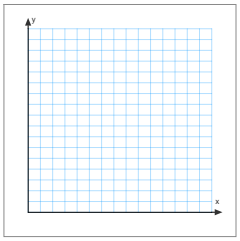
$$V = \pi r^2 h$$

a) Which variable(s) in the formula $V = \pi r^2 h$ should you set constant to generate a linear relationship? Explain why you made that choice.

b) Which variable(s) in the formula $V = \pi r^2 h$ should you set constant to generate a quadratic relationship? Explaing why you made that choice.

c) Verify you answers to parts a and b by graphing $V = \pi r^2 h$ when *r=5 cm* and when *h=5 cm. Where you correct? Explain.*





Homework: Pg. 304: #5,7,9,10,12,14