PRACTICE QUESTIONS: Identifying Quadratics

Date: Solutions

1. Determine whether the following are LINEAR, QUADRATIC, or NEITHER. **Only complete S.D. if necessary!**

a) Quadratic b/c S.D are equal.

x	y	F.D	S.D
-4	5		
-2	2	2-5=-3	-1-(-3) = 2
0	1	-1	=2
2	2	1	=2
4	5	3	=2
6	10	5	

b) Linear b/c F.D are equal.

x	y	F.D.	S.D.
0	600		
1	700	700-600 = 100	—
2	800	=100	—
3	900	=100	—
4	1000	=100	—
5	1100	=100	

c) Neither - S.D are not equal, F.D are not equal.

x	y	F.D	S.D.
0	7		
1	21	21-7 = 14	42-14 = 28
2	63	=42	=84
3	189	=126	=252
4	567	=378	

PRACTICE QUESTIONS: Identifying Quadratics

Date: Solutions

2. Determine whether the following equations are linear, quadratic, or neither, and explain why.

a) $y = x + 3$ — Linear — Why? Highest exp = 1

b) $y = x^{\frac{1}{3}} + 5$ — Neither — Why? Exp. is fraction

c) $y = x^2 - 2x + 5$ — Quadratic — Why? Highest exp = 2

d) $3x - y = 5$ — Linear — Why? Highest exp = 1

e) $5 - x^2 = 89$ — Quadratic — Why? Highest exp = 2

f) $x^4 + x^2 + 1 = 0$ — Neither — Why? Highest exp is 3 or greater

PRACTICE QUESTIONS: Identifying Quadratics

Date: Solutions.

3. The observations for the height of a paper airplane at different times are as follows: The airplane was thrown starting at a height of 1m above ground.

a) Determine the first difference and second differences. Record your answers in the table to the right.

Time (s)	Height (m)	First Differences	Second Differences
0	1		
0.5	3.25	3.25 − 1 = 2.25	
1	5	= 1.75	1.75 − 2.25 = −0.5
1.5	6.25	= 1.25	= −0.5
2	7	= 0.75	= −0.5
2.5	8.25	= 1.25	= −0.5
3	7	= −1.25	= −0.5
3.5	6.25	= −0.75	= −0.5
4	5	= −1.25	= −0.5
4.5	3.25	= −1.75	= −0.5
5	1	= −2.25.	

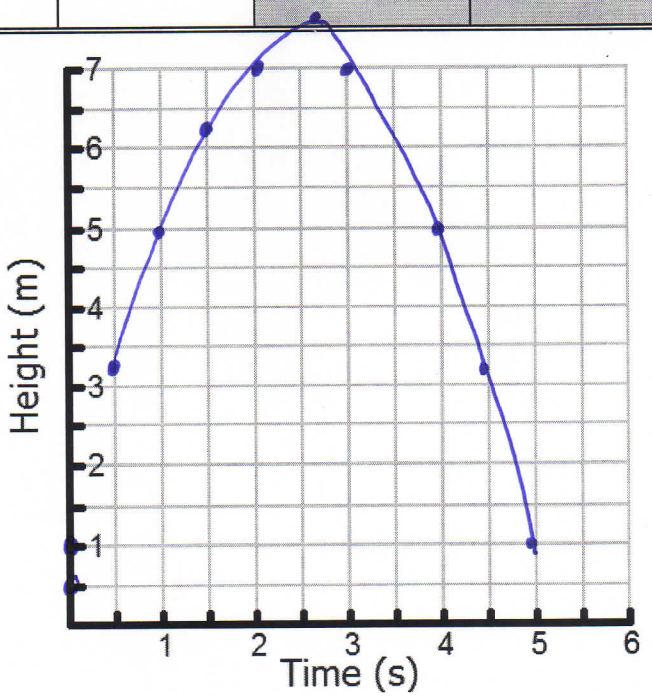
b) What type of function does this data represent? (Linear/quadratic/neither)

Quadratic

Give a reason for your choice.

S.D are equal.

c) Complete the scatter plot below by plotting time(s) on the horizontal axis and height (m) on the vertical axis.



d) For how long was the airplane in the air? before it was caught again at 1m.

5 seconds.

e) After how many seconds did the airplane reach the maximum height?

2.5 seconds

f) What is the height of the airplane after 4.5 s? 3.25m.