

U2 Day 4 – Quadratic Regression - HOMEWORK

1) A toy rocket was fired straight up into the air and can be modeled by the following data:

T (seconds)	1	2	3	4	5	6	7
H (feet)	169	301	401	469	505	509	481

- Write a quadratic equation to model this data: _____
- What is the maximum height obtained by the rocket? _____ (Find vertex $y = ?$)
- How long does it take the rocket to reach its maximum height? _____ (Find vertex $x = ?$)
- How far off the ground is the rocket when it is launched (0 seconds)? _____

2) A toy rocket was fired straight up into the air and can be modeled by the following data:

T (seconds)	1	2	3	4	5	6	7
H (feet)	151	263	343	391	407	391	343

- Write a quadratic equation to model this data: _____
- What is the maximum height obtained by the rocket? _____ (Find vertex $y = ?$)
- How long does it take the rocket to reach its maximum height? _____ (Find vertex $x = ?$)
- How far off the ground is the rocket when it is launched (0 seconds)? _____

3) Captain Zack Marvel shot a toy rocket upward from ground level. The table shows the height of the rocket at different times.

Time (seconds)	0	1	2	3	4
Height (feet)	0	256	480	672	832

- Find a quadratic model for this data: _____
- Use the model to estimate the height of the rocket after 1.5 seconds: _____
- At what the time(s) when the rocket will be at 1056 feet? _____

4) The table shows the percent of US homes with cable TV.

Year	1960	1970	1980	1990	2000
% of households	0	7	20	56	68

Let $x = \#$ of years after 1960

- Find a quadratic model for this data: _____
- Use the model to estimate the % of households with cable in 1995 _____

5) The table shows data about the wavelength and wave speed of deep water ocean waves.

Wavelength (m)	3	5	7	8
Wave speed (m/s)	6	16	31	40

- Write a quadratic function to model this data _____
- Estimate the wave speed that has a wavelength of 6 meters: _____

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DONE!