

A toy rocket is shot upward from ground level. The table shows the height of the rocket at different times.

Time (sec)	1	2	3	4
Height (ft)	256	480	672	832



- Find a quadratic model for this data.

$$y = -16x^2 + 272x$$

- Find the height of the rocket after 1.5 seconds.

$$x = 1.5 \rightarrow y = 372$$

- Find a regression equation for the following population data, using $t = 0$ to stand for 1950. Then estimate the population of Namibia in the years 1940, 1997, and 2005. Note: Population values are in thousands.

year t	0	5	10	15	20	25	30	35	40	45	50
pop.	511	561	625	704	800	921	1 018	1 142	1 409	1 646	1 894

$$y = .50x^2 + 1.94x + 538.70$$

$$1940 \rightarrow x = -10 \rightarrow y = 569.3$$

$$1997 \rightarrow x = 47 \rightarrow y = 1734.4$$

$$2005 \rightarrow x = 55 \rightarrow y = 2157.9$$

You can now finish Hwk #15

Practice Sheet

Scatter Plots and Regression Equations Sec 2-4 & 5-1

Due tomorrow

Finding an equation for a parabola using matrices.

Find the equation of the parabola that passes through these three points: (4, 19) (-2, 31) (1, 7)

x y

$$y = ax^2 + bx + c$$

$$(4, 19) \rightarrow 19 = 16a + 4b + c$$

$$(-2, 31) \rightarrow 31 = 4a - 2b + c$$

$$(1, 7) \rightarrow 7 = a + b + c$$

$$\begin{bmatrix} 16 & 4 & 1 \\ 4 & -2 & 1 \\ 1 & 1 & 1 \end{bmatrix} \begin{bmatrix} 19 \\ 31 \\ 7 \end{bmatrix}$$

$[A]^{-1}[B]$

$$(2, -6, 11)$$

$$y = 2x^2 - 6x + 11$$