1. Make a scatter plot of the data below. Sketch the scatter plot, labeling the axes.

Years since 1988	0	2	4	6	8	10
Avg House Price (thousands of dollars)	165	154.5	124.5	115	128	165

a) Find a regression equation to model this data. Round to the nearest hundredth.

EQ:

b) Find the average price of a house in 1985. Round to the nearest dollar.

c) Find the average price of a house in 2000. Round to the nearest dollar.

d) When will a house be worth $300,000?

2. Write a system of equations and use matrices to find the equation of the quadratic that contains these three points: $(-3,8)$, $(2,5)$, $(4,9)$

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a) Find a regression equation to model this data. Round to the nearest hundredth.

EQ: $y = 1.83x^2 - 19.55x + 172.73$

ANSWERS

b) Find the average price of a house in 1985. Round to the nearest dollar.

$x = -3$ # 247,850

c) Find the average price of a house in 2000. Round to the nearest dollar.

$x = 12$ # 201,650

d) When will a house be worth $300,000?

$300 = 1.83x^2 - 19.55x + 172.73$

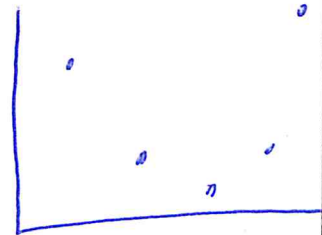$x = -4.6 \rightarrow \approx 1983$

$x = 15.24 \rightarrow \approx 2003$

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2. Write a system of equations and use matrices to find the equation of the quadratic that contains these three points: (-3,8), (2,5), (4,9)

$y = ax^2 + bx + c$

$(-3,8) \rightarrow 8 = 9a - 3b + c$

$(2,5) \rightarrow 5 = 4a + 2b + c$

$(4,9) \rightarrow 9 = 16a + 4b + c$

A
$$\begin{bmatrix} 9 & -3 & 1 \\ 4 & 2 & 1 \\ 16 & 4 & 1 \end{bmatrix}$$

B
$$\begin{bmatrix} 8 \\ 5 \\ 9 \end{bmatrix}$$

$a = 0.37$

$b = -0.23$

$c = 3.97$

$y = 0.37x^2 - 0.23x + 3.97$