Exercise 33

For the following exercises, consider this scenario: The median home values in subdivisions Pima Central and East Valley (adjusted for inflation) are shown in Table 1. Assume that the house values are changing linearly.

Year	Pima Central	East Valley
1970	32,000	120,250
2010	85,000	150,000

Table 1

If these trends were to continue, what would be the median home value in Pima Central in 2015?

Solution

Let t be the number of years after 1970. Use the two points on the line, $(0, 32\,000)$ and $(40, 85\,000)$, to find the slope.

$$m = \frac{y_2 - y_1}{t_2 - t_1} = \frac{85\,000 - 32\,000}{40 - 0} = \frac{53\,000}{40} = 1325$$

Then use the point-slope formula with either of the two points to obtain the equation of the line.

$$y - 32\,000 = 1325(t - 0)$$

$$y - 32\,000 = 1325t$$

$$y = 1325t + 32\,000$$

Plug in $t = 45$ to determine the median home value in Pima Central in 2015.

$$y = 1325(45) + 32\,000 = \$91{,}625$$