

Exercise 31

For the following exercises, consider this scenario: In 2000, the moose population in a park was measured to be 6,500. By 2010, the population was measured to be 12,500. Assume the population continues to change linearly.

What does your model predict the moose population to be in 2020?

Solution

Let t be the number of years after 2000. Use the two points, $(0, 6500)$ and $(10, 12500)$, to determine the line. Find the slope first.

$$m = \frac{y_2 - y_1}{t_2 - t_1} = \frac{12500 - 6500}{10 - 0} = \frac{6000}{10} = 600$$

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

$$y - 6500 = 600(t - 0)$$

$$y - 6500 = 600t$$

$$y = 600t + 6500$$

In 2020 the population will be

$$y = 600(20) + 6500 = 18500.$$