Exercise 50

In 2003, the owl population in a park was measured to be 340. By 2007, the population was measured again to be 285. The population changes linearly. Let the input be years since 1990.

(a) Find a formula for the owl population, **P**. Let the input be years since 2003.

(b) What does your model predict the owl population to be in 2012?

Solution

Let t be the number of years after 1990. Use the two given points, $(13, 340)$ and $(17, 285)$, to determine the equation of the line. Find the slope first.

$$m = \frac{P_2 - P_1}{t_2 - t_1} = \frac{285 - 340}{17 - 13} = \frac{-55}{4} = -13.75$$

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

$$P - 340 = -13.75(t - 13)$$

$$P - 340 = -13.75t + 178.75$$

$$P = -13.75t + 518.75$$

The owl population in 2012 is

$$P = -13.75(22) + 518.75 = 216.25. \quad \text{(about 216 owls)}$$