

Exercise 30

For the following exercises, consider this scenario: The number of people afflicted with the common cold in the winter months steadily decreased by 205 each year from 2005 until 2010. In 2005, 12,025 people were afflicted.

In what year will the number of people be 9,700?

Solution

Because the number of people that have a cold decreases steadily, a linear function can be used to model it. The slope is -205 , the rate at which the number of people that have a cold increases. The initial number of people that have a cold is 12,025.

$$C(t) = -205t + 12\,025$$

Set $C = 9700$ and solve the equation for t .

$$9700 = -205t + 12\,025$$

$$9700 - 12\,025 = -205t$$

$$-2325 = -205t$$

$$t = \frac{2325}{205} = \frac{465}{41} \approx 11.3$$

This means that it would take about 11 years (that is, until 2016) at this rate to have 9700 people with colds.