

Exercise 27

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.

If the function C is graphed, find and interpret the x - and y -intercepts.

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.

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

To determine the y -intercept, set $t = 0$.

$$C(0) = -205(0) + 12\,025 = 12\,025$$

Therefore, the y -intercept is $(0, 12\,025)$. To determine the x -intercept, set $C = 0$ and solve the equation for t .

$$0 = -205t + 12\,025$$

$$205t = 12\,025$$

$$t = \frac{12\,025}{205} = \frac{2405}{41} \approx 58.7$$

Therefore, the x -intercept is $(\frac{2405}{41}, 0)$. This means that it would take about 59 years at this rate to have zero people with colds.

