

Exercise 27

Table 4 gives the population of a town (in thousands) from 2000 to 2008. What was the average rate of change of population (a) between 2002 and 2004, and (b) between 2002 and 2006?

Year	Population (thousands)
2000	87
2001	84
2002	83
2003	80
2004	77
2005	76
2006	78
2007	81
2008	85

Table 4

Solution

The average rate of change of population between 2002 and 2004 is

$$\begin{aligned}\frac{f(2004) - f(2002)}{2004 - 2002} &= \frac{77\,000 - 83\,000}{2004 - 2002} \\ &= \frac{-6000}{2} \\ &= -3000,\end{aligned}$$

and the average rate of change of population between 2002 and 2006 is

$$\begin{aligned}\frac{f(2006) - f(2002)}{2006 - 2002} &= \frac{78\,000 - 83\,000}{2006 - 2002} \\ &= \frac{-5000}{4} \\ &= -1250.\end{aligned}$$