

Exercise 31

For the following exercises, find the average rate of change of each function on the interval specified.

$$g(x) = 3x^3 - 1 \text{ on } [-3, 3]$$

Solution

The average rate of change of the function between $x = -3$ and $x = 3$ is

$$\begin{aligned} \frac{g(3) - g(-3)}{3 - (-3)} &= \frac{[3(3)^3 - 1] - [3(-3)^3 - 1]}{3 + 3} \\ &= \frac{[3(27) - 1] - [3(-27) - 1]}{6} \\ &= \frac{(80) - (-82)}{6} \\ &= \frac{162}{6} \\ &= 27. \end{aligned}$$