Exercise 21

For the following exercises, determine the interval(s) on which the function is increasing and decreasing.

$$g(x) = 5(x+3)^2 - 2$$

Solution

$y = g(x)$ is the graph of a parabola that's shifted to the left by 3 units and shifted down by 2 units. The axis of symmetry is $x + 3 = 0$, or $x = -3$, so the function increases on $(-3, \infty)$ and decreases on $(-\infty, -3)$.