

5. Given the function $w(a)=2a^2+4a$, find an equation of the secant line containing $(3,w(3))$ and $(5,w(5))$. Express the equation in slope-intercept form.

$$y = -90 + 20a$$

$$y = 90 - 20a$$

$$y = -30 + 20a$$

$$y = -29 + \frac{41a}{2}$$

Solution

The line passing through the two points has the slope:

$$\begin{aligned} & \frac{w(5)-w(3)}{5-3} \\ &= \frac{(2(5)^2+4(5))-(2(3)^2+4(3))}{2} \\ &= \frac{70-30}{2} \\ &= 20 \end{aligned}$$

using one of the points, say $(3,30)$ and the slope to get the equation of the secant line:

$$y-30 = 20(a-3)$$

The equation in slope-intercept form:

$$y = -30 + 20a$$