

1. Given the function $u(z)=z^2+z$,
find an equation of the secant line containing $(1,u(1))$
and $(4,u(4))$. Express the equation in slope-intercept form.

$$a = -8 + 6z$$

$$a = 8 - 6z$$

$$a = -4 + 6z$$

$$a = -3 + \frac{19z}{3}$$

Solution

The line passing through the two points has the slope:

$$\begin{aligned} & \frac{u(4)-u(1)}{4-1} \\ &= \frac{(1(4)^2+1(4))-(1(1)^2+1(1))}{3} \\ &= \frac{20-2}{3} \\ &= 6 \end{aligned}$$

using one of the points, say $(1,2)$ and the slope to get the equation of the secant line:

$$a-2 = 6(z-1)$$

The equation in slope-intercept form:

$$a = -4 + 6z$$