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

$x = -16 + 12p$

$x = 16 - 12p$

$x = -8 + 12p$

$x = -7 + \frac{37p}{3}$

Solution

The line passing through the two points has the slope:

$$\frac{s(4)-s(1)}{4-1}$$

$$= \frac{(2(4)^2+2(4))-(2(1)^2+2(1))}{3}$$

$$= \frac{40-4}{3}$$

$$= 12$$

using one of the points, say $(1,4)$ and the slope to get the equation of the secant line:

$x-4 = 12(p-1)$

The equation in slope-intercep form:

$x = -8 + 12p$