

Find the equation of the line tangent to the graph of the function given by

$f(x) = 3x - x^2$  that is parallel to the line given by  $y - 2 = 5x$ .

$$y = 5x + 2$$

↑ slope =  $m = 5$ .

$$f'(x) = 3 - 2x = 5, \quad -2x = 2$$

$$x = -1. \quad f'(-1) = 5 \quad \text{When } x = -1,$$

$$y = -4. \quad (-1, -4) \leftarrow \text{point on graph.}$$

$$y - y_1 = m(x - x_1).$$

$$y + 4 = 5(x + 1), \quad \boxed{y = 5x + 1}.$$