

Exercise 6

For the following exercises, points $P(1, 1)$ and $Q(x, y)$ are on the graph of the function $f(x) = x^3$.

Use the value in the preceding exercise to find the equation of the tangent line at point P . Graph $f(x)$ and the tangent line.

Solution

The slope of the tangent line to f at $x = 1$ is 3, and this line passes through $(1, 1)$.

$$y - 1 = 3(x - 1)$$

$$y - 1 = 3x - 3$$

$$y = 3x - 2$$

Below is the graph of $y = f(x)$ and the tangent line at $x = 1$.

