

Exercise 12

For the following exercises, points $P(1.5, 0)$ and $Q(\phi, y)$ are on the graph of the function $f(\phi) = \cos(\pi\phi)$.

Use the values in the right column of the table in the preceding exercise to guess the value of the slope of the tangent line to f at $\phi = 1.5$.

[TYPO: Replace φ with ϕ .]

Solution

The slope of the tangent line to f at $\phi = 1.5$ is π , and this line passes through $(1.5, 0)$.

$$y - 0 = \pi(\phi - 1.5)$$

$$y = \pi\phi - 1.5\pi$$

Below is the graph of $y = f(\phi)$ and the tangent line at $\phi = 1.5$.

