

## Exercises

1. Write, but do not solve, the difference quotient for:

(a)  $f(x) = \sin(x)$

(b)  $g(x) = \ln(2x)$

(c)  $h(x) = \sqrt{x}$

(d)  $q(x) = e^x$

2. Calculate the difference quotient for the following equations:

(a) 1

(b)  $x$

(c)  $5x - 1$

(d)  $(x - 2)^2$

3. Use the difference quotient to calculate the slope of the tangent line at the point given:

(a)  $f(x) = 2x - 1, x = 0$

(b)  $g(x) = 3x^2 + 5x - 1, x = 3$

(c)  $h(x) = x^3 - 5x, x = 1$