1.1 Videos Guide

1.1a
- Ways to represent a function

Exercises:
- Find the domain of the function.
  - $f(x) = \sqrt{5 - x} + \sqrt{x + 3}$
  - $g(u) = \dfrac{u+1}{1 + \frac{1}{u+1}}$

1.1b

Exercise:
- Sketch the graph of the piecewise-defined function and give its domain.
$$f(x) = \begin{cases} 3 - \frac{1}{2}x, & x < 2 \\ 2x - 5, & x \geq 2 \end{cases}$$
- The absolute value function as a piecewise-defined function

Exercise:
- Express $g(x) = |x - 2|$ as a piecewise-defined function.

1.1c

Exercises:
- Find an expression for the function that is the line segment joining $(-5, 10)$ and $(7, -10)$.
- Find a formula for the described function and state its domain.
  A rectangle has an area $16m^2$. Express the perimeter of the rectangle as a function of the length of one of its sides.

1.1d
- Difference quotients
  - $\dfrac{f(b) - f(a)}{b - a}$
  - $\dfrac{f(a+h) - f(a)}{h}$

1.1e

Exercises:
- Evaluate the difference quotient $\dfrac{f(a+h) - f(a)}{h}$ for the function.
  - $f(x) = x^3$
  - $f(x) = \dfrac{x+3}{x+1}$