8 Behavior of the Difference Quotient as $h \mathop{\rightarrow} 0$

- 1. Draw the graph of $y = 2x^2$.
 - a. Draw secants from the origin to f(1) and f(2). Compare their gradients.
 - b. Draw tangent to the curve at the origin. What is the gradient of the tangent?
 - c. Which secant line had the closest slope to that of the tangent line?
 - d. What can you conclude about the accuracy of the slope of a secant?

2. Draw the graph of $y = x^3$.

- a. Draw secants from the origin to f(0.5) and f(1). Compare their gradients.
- b. Draw tangent to the curve at the origin. What is the gradient of the tangent?
- c. Which secant line had the closest slope to that of the tangent line?
- d. What can you conclude about the accuracy of the slope of a secant?

