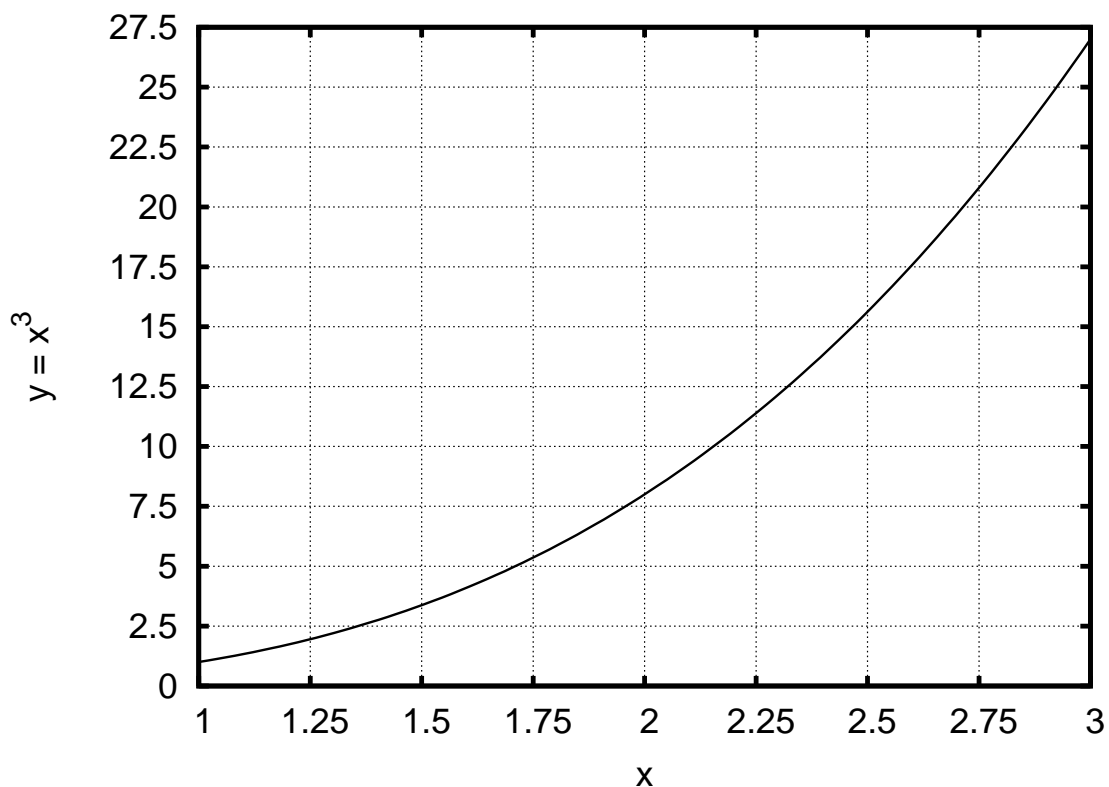


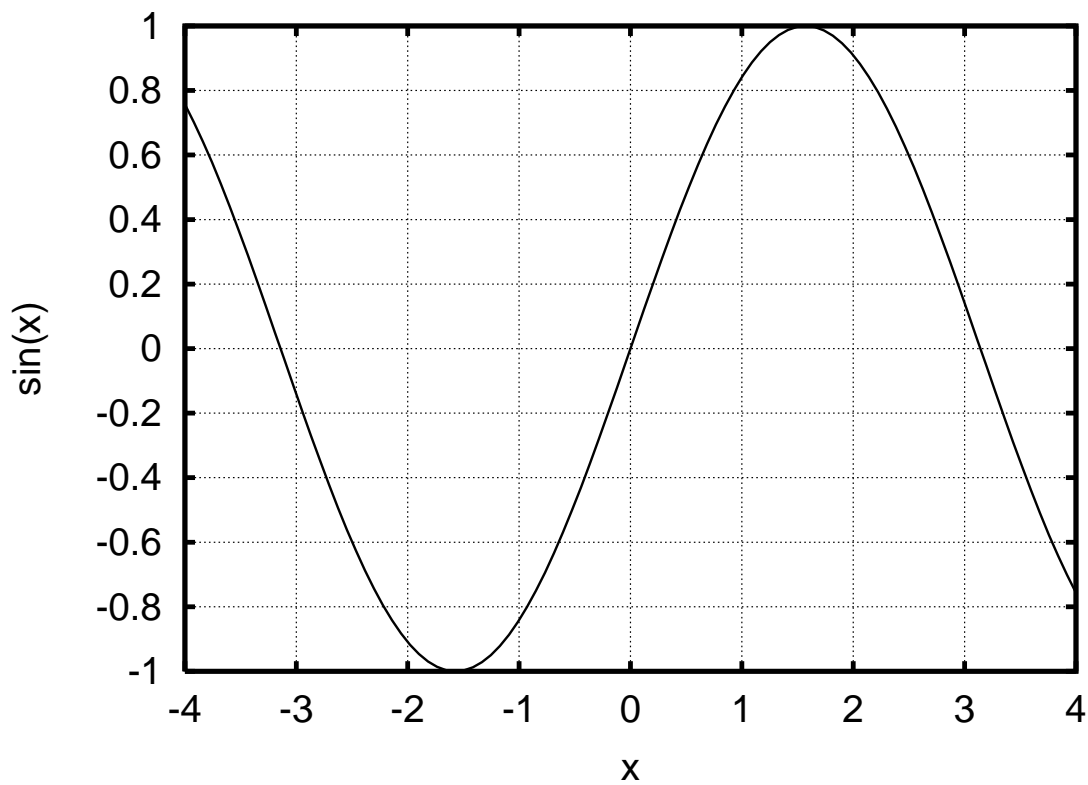
## The Derivative at a Point: Determining the Derivative Graphically, Numerically, and Algebraically

1. Consider  $f(x) = x^3$ . Using the graph below, estimate  $f'(1)$ .



2. Determine  $f'(1)$  numerically.
3. If you can, determine  $f'(1)$  using algebra.

4. Consider  $h(x) = \sin(x)$ . Using the graph below, estimate  $h'(0)$ .



5. Numerically estimate  $h'(0)$ . That is, start with the definition of the derivative. Use your calculator to numerically evaluate the limit. As always, use radians. Do your answers for  $h'(0)$  agree?
6. If you can, determine  $h'(1)$  using algebra.