Practice Exercises:

For each function in **exercises 1 to 4**, find its companion derivative function.
Then answer these three questions about each: (Round as needed to 2 decimal
places)

      a) What is $f(a)$?   b) What is $f'(x)$?
          c) What is the derivative at $x = a$?

Exercise 1: $f(x) = x^3$ and $a = 4$

Exercise 2: $f(x) = x^2 + x - 2$ and $a = 3$

Exercise 3: $f(x) = -0.98x + 24.5$ and $a = 7.1$

Exercise 4: $f(x) = 230e^x$ and $a = 11$

Exercise 5: A ball is thrown upward, and its height is given by the equation
$f(x) = -4.9x^2 + 27.2x + 2.5$. A graph of the function is shown as well, with
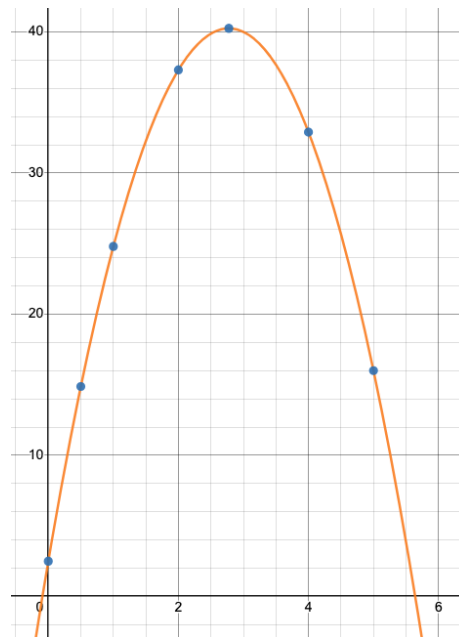points graphed. y is in meters; x is in
seconds.

Find $f'(x)$.

What is the velocity (derivative) of the
ball at the points that are labeled?

x = 0   x = 0.5

x = 1   x = 2

x = 2.776   x = 4

x = 5

Describe what is happening with the
ball. What is the initial velocity? What is happening to the velocity before the ball
reaches its maximum height? What is the velocity at the maximum height? On its
way back down, what is happening to the velocity?