1. Find the general antiderivative for the following functions.
   a. \( f(x) = 4x^2 \)
   b. \( f(x) = \frac{8}{x-1} \)
   c. \( f(x) = \sec(x) \tan(x) \)
   d. \( f(x) = \sin(x) \)
   e. \( f(x) = (x^2 - 4)^2 \)
   f. \( f(x) = e^{x^2} \)

2. Find the antiderivative for the following functions.
   a. \( f(x) = 6x^2 \) for \( F(0) = 1 \)
   b. \( f(x) = \cos\left(\frac{x}{2}\right) \) for \( F(1)=0 \)
   c. \( f(x) = 28 - 10 \sec^2(5x) \) for \( F(0) = 1 \)
   d. \( f(x) = \sqrt{x-2} \) for \( f(x) = F(6) = 20 \)

3. In variable form, solve for the generalized position function for one direction movement.

4. A ball is thrown up 6 feet from the ground and is moving at a rate at 100 feet/second. How high does the ball go, and how long does it take to reach that height?

5. A ball is thrown downward from a height of 512 feet with a velocity of 64 feet per second. How long will it take for the ball to reach the ground?

6. The world record for the highest jump is 1.48 meters. With what velocity did the person have to have to be able to jump that high?