Q1) If \( f(t) = t^3 - 8t^2 + 24t \) is the position function of a moving particle, meter/sec.
   a. Find the total distance traveled during the first 6 seconds.
   b. When is the particle speeding up? When is it slowing down?

Q2) If \( x^2 + y^2 + xy = 7 \) and \( \frac{dy}{dt} = 2 \), find \( \frac{dx}{dt} \) when \( x = 1 \) and \( y = 2 \).