1. (10 points) Suppose that the demand of a certain commodity is given by

\[ D(p) = 200 - p^2. \]

What is the elasticity of demand when the price is \( p = 10 \)? How would an increase in price affect the revenue?

*Hint:* recall that \( E(p) = \frac{p}{q} \frac{dq}{dp} \), where \( q = D(p) \), is approximately the percentage rate of change in demand \( q \) produced by a 1\% rate of change in price \( p \).

2. (5 points) There are 320 yards of fencing available to enclose a rectangular field. How should this fencing be used so that the enclosed area is as large as possible?

*Hint:* first find the function that represents the enclosed area in terms of the length of one side of the rectangle.

3. (5 points) Differentiate \( f(x) = \frac{\sqrt{x - 1} (3x + 7)^3}{(2x + 3)^9}, \ x > 1. \)

*Hint:* \( \frac{d}{dx} \log(g(x)) = \frac{g'(x)}{g(x)} \) for \( g(x) > 0. \)