1. (5 Points) Find the absolute maximum and absolute minimum of \( f(x) = 4 - x^2 \), where \( f \) is defined on the domain \( D = [-3, 2] \).

**Endpoints:**
- \( f(-3) = -5 \)
- \( f(2) = 0 \)

**Crit Pts (where \( f'(x) = 0 \)):**
- \( f'(x) = -2x = 0 \)
- \( x = 0 \)
- \( f(0) = 4 \)

**Global Max:** \( = 4 \) when \( x = 0 \).

**Global Min:** \( = -5 \) when \( x = -3 \).

2. (5 Points) Bucky Badger is standing on the 10 yard line outside of the end zone. From there, he watches Russell Wilson zoom into the end zone. With his laser vision eyes, Bucky is able to determine that the distance from him to Wilson is increasing at a rate of 6 yards per second. Assume that Wilson is running in a line perpendicular to the goaline, and that this line is exactly 5 yards from the sideline. How fast was Wilson running when he made the touchdown?

[Diagram of a triangle with Bucky Badger at one corner, Russell Wilson at another, and the sideline at the third, with sides labeled appropriately.]

**Constant Eqn:**
\[ x^2 + s^2 = r^2 \]

Differentiating this gives:
\[ 2x \frac{dx}{dt} = 2r \frac{dr}{dt} \]

When \( x = 10 \), we know \( 10^2 + s^2 = r^2 \), i.e. \( r = 5\sqrt{5} \).

\[ \Rightarrow x(10) \frac{dx}{dt} = 2(5\sqrt{5})(6) \Rightarrow \frac{dr}{dt} = \frac{(5\sqrt{5})(6)}{10} \]