

Show all work.

1. (4 points) For $f(x) = 3 - 2x^2$, calculate $f'(2)$ using the difference quotient.
2. (4 points) Calculate the second derivative $\frac{d^2}{dx^2} (7 \sin x + \sqrt{x} - 2e^x - 5x)$.
3. (3 points) Find the equation of the tangent line to the curve $y = 2x - x^3$ at the point $(-2, 4)$.
4. (5 points) Calculate $\frac{d}{ds} \frac{\sec(s) + e^s}{s^2 - \cos(s)}$.
5. (4 points) If $g(t) = 7t^2(e^t - 15 \tan t)$, find $g'(t)$.
6. (2 point bonus) Find $\frac{d^{10}}{dx^{10}} (e^x \sin x)$.