Show work for all answers.

1. **(3 points)** Calculate $\frac{d}{ds}\left(2s^7 - \frac{4}{s^5} + 3e^s\right)$

2. **(5 points)** If $y = 3\sec x + 2$, calculate its second derivative $\frac{d^2y}{dx^2}$.

3. **(4 points)** If $f(t) = \frac{t^3+e^t}{t^2-3t}$, calculate $f'(t)$.

4. **(4 points)** Calculate $\frac{d}{dx}\cos(x^3 - 2x)$.

5. **(4 points)** Find the equation of the tangent line to the curve $y = (2x^2 - 7x + 5)e^x$ at $(0, 5)$.

6. **(2 point bonus)** Find a general formula for $\frac{d^3}{dx^3}[f(x)g(x)]$.