Finding the Derivative Using the Differentiation Rules (Again)

Use the differentiation rules we have developed in class to find the following derivatives. **Write your final result without negative exponents. Circle or box your final answer.** Use separate paper and attach if you need more room.

1. Find \( f'(x) \) if \( f(x) = (x - 3)(x + 6) \)

2. Find \( g'(t) \) if \( g(t) = \frac{t^5 - 4t + 3}{\sqrt{t}} \)

3. Find \( \frac{d^3y}{dx^3} \) if \( y = x^5 + 2x^4 - x^3 + 3x^2 - 10x + 50 \)

4. If \( h(u) = 2u^5 e^u \) find the value of \( h''(1) \)

5. If \( s = \frac{3}{t} \) then find \( \left. \frac{d^3s}{dt^3} \right|_{t=-2} \)