

9.4

**Problem 5.**

$$f'(x) = 3x^2 \cdot e^x + x^3 e^x$$

**Problem 6.**

$$f(x) = \frac{e^{2x}}{x} \Rightarrow f'(x) = \frac{2xe^{2x} - e^{2x}}{x^2} = \frac{e^{2x}}{x^2}(2x - 1)$$

**Problem 7.**

$$f'(x) = -3e^{-x} = -\frac{3}{e^x}$$

**Problem 8.**

$$f'(x) = \frac{(2x+1)(e^x+1) - (x^2+x)(e^x)}{(e^x+1)^2}$$

**Problem 9.**

$$f'(x) = 2e^{2x}(x^2 + 2x + 2) + e^{2x}(2x + 2) = 2e^{2x}(x^2 + 2x + 2 + x + 1) = 2e^{2x}(x^2 + 3x + 3)$$