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Quiz 11

Problem 1

Page 198, problem 16.

$$z(w) = w^{3/2}(w + ce^w)$$

Problem 2

Page 198, problem 16.

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

Solution to the Problem 1

$$z'(w) = (w^{3/2}w + w^{3/2}ce^w)' = (w^{5/2} + w^{3/2}ce^w)' = \frac{5}{2}w^{3/2} + \frac{3}{2}w^{\frac{1}{2}}ce^w + w^{3/2}ce^w$$

Solution to the Problem 2

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

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

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