

Assignment 22 (11/25)

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Problem 1

Problems 7.4.(17, 38, 42, 66, 70).

Problem 2

Find

$$\int \frac{1 - e^{2x}}{1 + e^{2x}} dx$$

[HINT: $(e^x + e^{-x})' = e^x - e^{-x}$]

Problem 3

Find

$$\int \frac{1}{1 + e^x} dx$$

[HINT: substitute $u = -x$ OR use problem 2]

Problem 4

What is the derivative of $f(x) = a^x$ for $a > 0$?

[HINT: Recall $a^x = e^{x \ln(a)}$]

Problem 5

Find

$$\int_0^1 (2^x + x^2) dx$$

Problem 6

Let f, g be differentiable functions. Find the derivative of $(f(x))^{g(x)}$.

Problem 7

Find

$$\frac{d}{dx}[(\tan(x))^{\sec(x)}], \quad \frac{d}{dx}[(x)^{2^x}]$$