

Quiz 5

Problem 1 (2 pts) Find the following integral.

$$\int_{-\infty}^{\infty} 2^{-|x|} dx$$

Problem 2 (3 pts) State whether or not each integral diverges or converges. You do not need to find the integral if it converges.

$$(a) \int_0^{\infty} \frac{2}{x} - \frac{3}{x^2} dx \quad (b) \int_{-\infty}^{\infty} 2^{-x} dx \quad (c) \int_0^{\infty} 1.01^{-x} dx$$

Problem 3 (3 pts) Find the limit as $x \rightarrow 0$ of the functions

$$(a) \frac{e^x - 1}{4x} \quad (b) \frac{e^{x^2} - 1}{x^4}$$

Problem 4 (2 pts) Find the limit as $x \rightarrow \infty$ of the following function.

$$x \sin(1/x)$$