

Quiz 4 Solutions  
July 12

Name:

1. Evaluate, if possible:

$$\int_{-1}^0 \frac{1}{x^2} dx$$

Since there is a discontinuity at  $x = 0$ , this is an improper integral:

$$\begin{aligned}\int_{-1}^0 \frac{1}{x^2} &= \lim_{t \rightarrow 0^-} \int_{-1}^t \frac{1}{x^2} dx \\ &= \lim_{t \rightarrow 0^-} \left[ \frac{-1}{x} \right]_{-1}^t \\ &= \lim_{t \rightarrow 0^-} \left[ -\frac{1}{t} + \frac{1}{-1} \right] \\ &= \infty\end{aligned}$$

Thus the integral is divergent.

2. The following summation is a left endpoint approximation for an integral.  
Write the integral.

$$\sum_{i=0}^{29} \frac{8}{10} \ln \left( \left( 2 + \frac{i}{10} \right)^2 \right)$$

$$\int_2^5 8 \ln(x^2) \, dx$$