

## Problem Set 14

1) Evaluate  $\int_0^1 \frac{dx}{\sqrt{x}}$ .

2) Evaluate  $\int_1^\infty \frac{dx}{\sqrt{x}}$ .

3) Let  $p$  be a real number. For which values of  $p$  does the integral  $\int_0^1 \frac{dx}{x^p}$  converge? When the integral converges, determine the value of the improper integral.

4) Let  $p$  be a real number. For which values of  $p$  does the integral  $\int_1^\infty \frac{dx}{x^p}$  converge? When the integral converges, determine the value of the improper integral.