

Name: SOLUTIONS

MATH 19 QUIZ
13 OCTOBER 2016
BROWN UNIVERSITY
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1. Find $\int_1^{\infty} x^p dx$, where p is real number. You'll need to express your answer in terms of p , and you'll have to split it into cases depending on the value of p .

CASE 1

$$p \geq -1$$

CASE 2

$$p < -1$$

$$\int_1^{\infty} x^p dx$$

$$= \frac{x^{p+1}}{p+1} \Big|_1^{\infty}$$

converges if $p < -1$

$$\text{to } \frac{-1}{p+1}$$

and diverges otherwise.