M 302 Exam 2 Problem 8

A number of you had the same problems with problem 8 on the exam. Here is what I was looking for, along with the points I assigned.

True. r is a rational number. This means that $r = \frac{p}{q}$, where p and q are integers and q cannot be 0. Also, it is given that r is not equal to 0, so p is not equal to 0.

Therefore, $\frac{1}{r} = \frac{1}{\frac{p}{q}}$ which after simplifying is the same as $\frac{1}{r} = \frac{q}{p}$.

From above we know p and q are both integers and p cannot be 0, so $\frac{1}{r} = \frac{q}{p}$ satisfies the definition of a rational number.

Comments - grading

5 pts. - Correct answer.
5 pts. - Explanation.

- If you tried to show this using an example, I gave 1 point for explanation.

- If you attempted to show this and were on the right track I gave you anywhere between 1 point and 4 points for explanation, depending on how much I felt you understood about what you were doing.

- Full credit did not require an answer as complete or formal as I showed above, but I was looking for solid reasoning along those lines.

Jonathan Pearson, April 6, 2005.