

Math 241 - Final Exam!

Patrick Baumert

1 Instructions

1. Start off by filling in your information. Do this without looking at anything and be good to go.
2. Check before and before others as posted on Canvas can be used.
3. Start by reading the first three or four questions.
4. Any indication that your solution and answer affect those that challenge it is not a sign that you are not understanding the question but the question that the answer is not.

2 Problems (DO ANY TEN)

Please indicate on the first page of your submission the questions you wish that you are attempting. At least, you will be graded on all 10 questions.

1. (a) Consider a rational function $\frac{p(x)}{q(x)}$ such that it is always increasing for $x > 0$.
(b) Show that this function is not increasing for $x < 0$.
(c) Show that this function is not increasing for $x < 0$.
(d) Show that this function is not increasing for $x < 0$.
(e) Show that this function is not increasing for $x < 0$.
(f) Show that this function is not increasing for $x < 0$.
(g) Show that this function is not increasing for $x < 0$.
(h) Show that this function is not increasing for $x < 0$.
(i) Show that this function is not increasing for $x < 0$.
(j) Show that this function is not increasing for $x < 0$.
2. Find the following limits. Please show all steps.

(a) $\lim_{x \rightarrow 0} \frac{1}{x^2}$

(b) $\lim_{x \rightarrow 0} \frac{1}{x^3}$

(c) $\lim_{x \rightarrow 0} \frac{1}{x^4}$

(d) $\lim_{x \rightarrow 0} \frac{1}{x^5}$