Quiz 5

This is a preview of the published version of the quiz

Started: Dec 15 at 10:23pm

Quiz Instructions

Question 1

1 pts

True or False: If $f(x) \leq g(x)$ and $\int_0^\infty g(x)\mathrm{d}x$ diverges, then $\int_0^\infty f(x)\mathrm{d}x$ also diverges.

Question 2

1 pts

For what values of b is $I = \int_0^\infty e^{bx}\cos(x)\mathrm{d}x$ convergent? Evaluate the integral for those values of b.

Hint: Use the following format to answer: b\in (a,c); I=f(b)

Question 3

1 pts

Suppose you want to express $\frac{x^2-4}{x^2(x^2+4)}$ in the form $\frac{f_1(x)}{g_1(x)}+\cdots+\frac{f_n(x)}{g_n(x)}$. What is n equal to? Give $g_1(x),\ldots,g_n(x)$.

Hint: Write up the answer in the following format: n=5; g_1(x)=x^3; ...g_n(x)=sin(x)

Question 4

1 pts

If the expression $\sqrt{a^2-x^2}$ occurs in an integral, what substitution might you try?

Hint: Answer using the following format: $u=f(x)$

Question 5

1 pts

Is it possible to find a number n such that $\int_0^\infty x^n \mathrm{d}x$ is convergent? If yes, give the value or the interval of n.

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