Quiz 4

Fall 2013 **Your name:** _____

Math 0230 **Your TA's name:** _____

No calculators, no notes, no books. Show all your work (no work = no credit). Write neatly. Simplify your answers.

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1. [5 points] Find $\lim_{n\to\infty} \dfrac{\sin n}{n+2}$ by applying the Squeeze theorem. Support your solution.

No credit will be given if the Squeeze theorem is not used.

2. [5 points] Using the Comparison Test determine whether the series $\displaystyle\sum_{n=1}^{\infty} \frac{\sin^2 n + 1}{(n+2)^2}$ is convergent or divergent.

bonus problem [5 points extra] For the Fibonacci sequence ($f_1 = f_2 = 1$, $f_n = f_{n-1} + f_{n-2}$) show that $\dfrac{1}{f_{n-1}f_{n+1}} = \dfrac{1}{f_{n-1}f_n} - \dfrac{1}{f_n f_{n+1}}$ and find the series $\displaystyle\sum_{n=2}^{\infty} \frac{1}{f_{n-1}f_{n+1}}$.