Quiz 3a **Calculus 2** **3/4/2005**

Each problem is worth 5 points. Clear and complete justification is required for full credit.

1. Write the first 4 partial sums for the series $\sum_{n=1}^{\infty} \frac{2}{n^2}$, approximated to the nearest thousandth.

$S_1 = \frac{2}{1^2} = 2.000$

$S_2 = 2 + \frac{2}{2^2} = 2.500$

$S_3 = 2 + \frac{2}{2^2} + \frac{2}{3^2} = 2.722$

$S_4 = 2 + \frac{2}{2^2} + \frac{2}{3^2} + \frac{2}{4^2} = 2.847$

plug in 1 (you're starting with one) into the equation and do that 4 times. Add each partial sum up.

Excellent

$1 - \frac{1}{3}$

2. Evaluate $\sum_{n=1}^{\infty} \frac{2}{3^n}$

$a = \frac{2}{3}$

$r = \frac{1}{3}$

$\frac{2}{3^{(n)}} + \frac{2}{3^2} + \frac{2}{3^3} + \frac{2}{3^4}$

$\frac{2}{9} + \frac{2}{27} + \frac{2}{81}$

$\frac{2}{3}$

★ To find the sum of the series use the formula

$S = a/1-r$

$S = \frac{\frac{2}{3}}{1 - \frac{1}{3}}$

Great

$\frac{2}{3} \cdot \frac{3}{2} = \boxed{1}$

★ As we keep adding this up for an infinity amt. of times it = 1.