KFUPM SEM II (Term 062) Name: _____ Serial #: _____

MATH 102 Quiz # 5 ID: #: _____ Section #: _____

1. (3-points) Find a formula for the general term a_n of the sequence

$$\left\{\frac{3}{5}, \frac{6}{7}, \frac{9}{9}, \frac{12}{11}, \frac{15}{13}, \dots\right\}.$$

Then determine whether the sequence converges or diverges. If it converges, find the limit.

2. (4-points) Find the values of x for which the series $\displaystyle\sum_{n=3}^{\infty} \frac{(2x+1)^n}{3^{n-1}}$ converges. Then, find the sum for those values of x.

3. (4-points) Show that the integral test can be used to test the series $\sum_{n=1}^{\infty} \frac{4}{n^4}$ for convergence or divergence. If it converges, then find an upper bound for the size of the error if its sum S is approximated by S_{50} (write your answer in a decimal form).

4. (4-points) Find a closed form for the general form S_n of the sequence of partial sums of the series $\sum \frac{1}{n^2+7n+17}$. Then find, if possible, the sum of the series.

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MATH 102 Quiz # 5 ID: #: _____ Section #: _____

1. (3-points) Find a formula for the general term a_n of the sequence

$$\left\{\frac{3}{4}, \frac{5}{8}, \frac{7}{12}, \frac{9}{16}, \frac{11}{20}, \dots\right\}.$$

Then determine whether the sequence converges or diverges. If it converges, find the limit.

2. (4-points) Find the values of x for which the series $\displaystyle\sum_{n=2}^{\infty} \frac{(2x-1)^n}{3^{n+1}}$ converges. Then, find the sum for those values of x.

3. (4-points) Show that the integral test can be used to test the series $\sum_{n=1}^{\infty} \frac{2}{n^3}$ for convergence or divergence. If it converges, then find an upper bound for the size of the error if its sum S is approximated by S_{100} (write your answer in a decimal form).

4. (4-points) Find a closed form for the general form S_n of the sequence of partial sums of the series $\sum \frac{1}{n^2+9n+20}$. Then find, if possible, the sum of the series.