Name: _____
Student ID: _____

Quiz 11

This quiz is graded out of 10 marks. No books, calculators, notes or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

Question 1. *(2 marks)* §8.1 #6 Find a formula for the general term a_n of the sequence, assuming that the pattern of the first few terms continues.

$$\left\{-\frac{1}{4}, \frac{2}{9}, -\frac{3}{16}, \frac{4}{25}, \ldots\right\}$$

Question 2. *(3 marks)* §8.1 #27 Determine whether the sequence converges or diverges. If it converges, find the limit.

$$a_n = \frac{(n+2)!}{n!}$$

Question 3. *(5 marks)* §8.2 #19 Determine whether the series is convergent or divergent by expressing S_n as a telescoping sum. If it is convergent find its sum.

$$\sum_{n=2}^{\infty} \frac{2}{n^2-1}$$

Question 4. *(5 marks)* Find the volume of the solid obtained when the region bounded by the graphs of $f(x) = \frac{4}{x}$, $y = 1$ and $g(x) = x$ is rotated about the line $y = -1$.