Name: _____
Student ID: _____

Quiz 9

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. *(4 marks)* §8.1 #26 Determine whether the sequence converges or diverges. If it converges, find the limit.

$$a_n = \frac{(\ln n)^2}{n}$$

Question 3. *(4 marks)* §8.1 #24 Determine whether the sequence converges or diverges. If it converges, find the limit.

$$a_n = \frac{\sin 2n}{1+\sqrt{n}}$$

Question 4. *(5 marks)* Set up the integral to find the volume of the solid obtained from the region in the first quadrant bounded by the graphs of $y = \cos x$, $y = \frac{4x}{\pi\sqrt{2}}$ and $x = 0$ rotated about the line $x = \frac{\pi}{4}$.