MA 224 - Quiz 11

Please write your name and section number, and put your final answers in a box.

Since this is a take home quiz, the whole point is that you take the time to figure things out—you can look at the book and your notes (or even ask someone else to explain something to you). But once you figure out how to do each problem, you MUST write up your solutions without any help at all, not even looking at your notes.

SOME ANSWERS ON THE NEXT PAGE (so no credit is given for the answer alone: you have to have correct work!)

1. (2 points) Write the following series in compact form (meaning write it using summation notation). Make sure your index starts at $n = 0$, and SHOW WORK.

$$1 - \frac{4}{1} + \frac{9}{2} - \frac{16}{6} + \frac{25}{24} - \cdots$$

2. (2 points) Show whether or not this series converges (you don't have to say what number it converges to)

$$\sum_{n=2}^{\infty} \frac{(n-1)^2}{3^{n+1}}$$

3. (3 points) Find the interval of convergence for this power series:

$$\sum_{k=3}^{\infty} \frac{2^{k+1} x^k}{k!}$$

4. (2 points) Find the interval of convergence for this power series:

$$\sum_{k=0}^{\infty} \frac{3^{k-1} x^k}{(k+1)^2}$$

5. (1 points) These are the first two terms of a geometric series. What does this series converge to? (SHOW how you get that number).

$$\frac{5}{6} - \frac{1}{2} + \cdots$$

(Hint: what is a? What is r?)

2. It does converge (show why!)

4. $\left(-\frac{1}{3}, \frac{1}{3}\right)$ (show how!)

5. $\frac{25}{48}$ (show how!)