

**MA 330 HOMEWORK**  
**DUE WEDNESDAY, APRIL 8**

Having finished the first nine chapters of *Journey Through Genius*, this is another good point to reflect on what we've discussed so far. Recall that chapters 7, 8 and 9 centered around the following "great theorems": Newton's approximation of  $\pi$ , the divergence of the harmonic series, and the evaluation of  $\sum_{k=1}^{\infty} \frac{1}{k^2}$ .

**Problem 1:** For each of these theorems, state the theorem and provide an outline of the proof given in *Journey Through Genius*. This outline can be in bulleted form or paragraph form, with or without diagrams. Your outlines should capture the fundamental ingredients, ideas, and methods of the proof.

NOTE: Problem 1 may be handwritten.

**Problem 2:** Choose your favorite *proof* of the three discussed above. Write one paragraph explaining why this *proof* is your favorite.

NOTE: Problem 2 should be typed.