

**If you are leaving for break before the class meets on Friday, give me the assignment or slide the assignment under my office door before you leave campus.**

Place your name on the back of this sheet of paper and nowhere else. Staple your answers face up on the front of this sheet of paper. Failure to follow these directions will cost you 1 point. Your assignment will be typed, except graphs can be drawn by hand and mathematical equations can be done by hand. Failure to type it will cost you 10 points. If you use double-sided printing or print on the back of scrap paper, I will give you one additional point.

- 1) (15 points) How does economic growth cause urban congestion?
- 2) (15 points) Most of the time since World War II, the full employment level of GDP has grown at 2.5% per year. However, from the late 1970s until the late 1990s, the growth rate reduced to 2.0%. I suspect that when economists look back at the time since 2008, the growth rate will have dropped back to 2.0% again. How long will it take GDP to double if the growth rate is 2.5%? How long will it take GDP to double if the growth rate is 2.0? Show all work for both calculations. Why do we care whether the growth rate is 2.0% or 2.5%?
- 3) (15 points) If you were to calculate how much money you need to save each year for retirement, the number is much greater if you wait a few years than if you start immediately upon graduation. For example, if you plan to work for 46 years after graduation and you earn an average real return of 5% (which is low for the stock market), then by waiting 12 years before you start to save, you must double your savings per year. (With a 9% return, waiting 8 years before you start saving will you to have to double your savings per year to save the same amount.) Give two reasons why waiting 12 years will double your required savings.
- 4) (20 points) How would lengthening the duration of patents help the economy to grow? What is the downside of increasing the duration of patents?
- 5) (15 points) How does limiting protectionism help an economy to develop?
- 6) (20 points) What are two problems with the definition of economic growth most commonly used? Explain how those problems could lead to misleading results.