Write your name on the cover of the test booklet and nowhere else. Enclose this sheet with the booklet. Failure to follow these directions will cost you 1 point. The test has 100 points (to be scaled up to 160 points) and is scheduled to take 50 minutes. Therefore, expect to spend 1 minute for every 2 points. For example, a 12-point question should take 6 minutes. I cannot give extra time because some students have a class after your class.

1) (12 points) Answer EITHER Part A OR Part B.
A) Why might insurance companies charge a little bit more than actuarially fair premiums, while we are still willing to pay it. Make sure you define "actuarially fair."
B) Explain why we want negative correlated assets in our portfolio.

2) (16 points) Answer EITHER Part A OR Part B.
A) On the provided graph paper, draw the diagram with income on the horizontal axis and utility on the vertical axis for a risk averse person. Suppose the person earns $1000 and has a 20% probability of losing $500. As drawn, how much would that person be willing to pay for insurance? Explain how you got your answer.
B) On the provided graph paper, draw the diagram for return on the vertical axis and standard deviation on the horizontal axis. Suppose the risk-free return is 2% and the market return is 10%. Also, assume that σ_M is 15%. Draw the diagram such that the risk averse person puts 80% of their money into the market. Explain how your graph shows that 80% of the portfolio is in the market. Of interest, according to the link below, the S & P 500 has an average return approximately 10% and a standard deviation of about 15%. http://www.lazyportfolioetf.com/etf/spdr-sp-500-spy/

3) (18 points) Answer EITHER Part A OR Part B.
A) Use the graph on the back to answer this. What is the wage rate and the rental rate for the two TC lines?   Show all work. Find two points on the LRTC curve and to find two points on the SRTC curve if you have 2 units of capital. Explain how you found them. Plot those four points.
B) Copy this table to your answer book. Fill in the missing row. Show all calculations or write how you got the answer.

Q	TC	TFC	TVC	ATC	AFC	AVC	MC
4	40	24	16	10	6	4	7
	60				4		

4) (18 points) Draw the ATC/AFC/AVC/MC diagram. Illustrate EITHER the event in Part A OR the event in Part B. Explain why the curve(s) moved as drawn.
A) The price of the cotton (you use to make clothing) increases.
B) The charge for a kilowatt-hour increases and your company only uses electricity for lights at night.

5) (18 points) Answer EITHER Part A OR Part B.
A) Suppose the production function was given by $Q = KL^2$, w = $4/L, and r = $1/K. Use the Lagrangian to find the total cost function. **Do not** worry about the ATC and MC functions. **Show all work.**
B) This question will look hard, but if you think about the definitions of the types of costs, it is easy. Suppose the total cost function is given by $TC = 100 + 3Q + 2Q^2$. Find the functions for TVC, TFC, ATC. AVC. AFC. And MC. **Show all work.** If there is no work, state how you got the answer.

6) (18 points) Answer EITHER Part A OR Part B.

A) Draw the APL and MPL graphs. Illustrate the effects of an increase in the amount of capital. Explain why the curves moved as drawn.

B) Daw a isoquant diagram with three isoquants. Put a scale on your axes. Label your isoquants so that between the first two, there is increasing returns to scale and between the last two, there is decreasing returns to scale. Prove that your diagram starts out with economies of scale, and then has diseconomies of scale.