

First Name: \_\_\_\_\_ Last Name: \_\_\_\_\_

Student-No: \_\_\_\_\_ Section: \_\_\_\_\_

**Very short answer questions**1. 2 marks Each part is worth 1 mark. Please write your answers in the boxes.

(a) Compute  $\lim_{x \rightarrow 2} \frac{x^2 \cdot e^{3 \cdot x} + x \cdot \ln(x)}{\sqrt{x+1}}$ .

Answer: 

(b) What is the future value of \$250 invested for 8 months at a nominal interest rate of 4% compounded monthly?

Answer: **Short answer questions — you must show your work**2. 4 marks Each part is worth 2 marks.

(a) Compute  $\lim_{x \rightarrow 9} \frac{\sqrt{x}-3}{x-9}$ .

Answer: 

(b) You receive a loan with real interest rate of 2%, what is the nominal interest rate assuming it was compounded quarterly.

Answer:

**Long answer question — you must show your work**

3. 4 marks An umbrella factory sells 6,000 umbrellas a year at the cost of \$8 a piece. An umbrella sale last December showed that a decrease of \$1 in the price of an umbrella caused an increase in selling of 500 umbrellas a month.

Find the linear demand equation for the umbrellas. Use the notation  $p$  for price and  $q$  for the monthly demand.

(a) Answer:

- (b) Compute the maximal revenue of the factory.

Answer: