MATH 108 – QUIZ 7 – 15 OCTOBER 1998

Answer all of the following questions in the space provided. Show all work as partial credit may be given. Answers without justification, even if they are correct, will earn no credit.

1. (3 pts.) Find the derivative of the function $f(x) = (x^2 - 3x)(x^5 + 3x^2 + 2)$ *using the product rule.* If you do not use the product rule you will receive no credit.

2. (3 pts.) Find the derivative of the function $f(x) = \dfrac{x^2 - 3x}{x^4 + 2}$

3. (2 pts. each) It is estimated that the population of a certain town t years from now will be $P(t) = t^2 + 200t + 10000$ persons.

(a) Find the rate at which the population is changing 10 years from now.

(b) By how much will the population actually change during the 10^{th} year?