Exam 2 covers Section 2.8 through Section 3.8 (on linearization, but not on differentials) and the Discussion Sessions 4 through 6. Pay particular attention to the Suggested Exercises and to definitions.

You will need to know how to apply the differentiation rules: power rule, derivative of a polynomial, derivative of an exponential function, product rule, quotient rule, and chain rule. Know also how to find the derivative of logs, trig functions, and inverse trig functions (arcsin and arctan).

You should know the text book's definition of the number e given on page 189. Do you see that the limit in that definition is the definition of the derivative of e^x at $x = 0$?

Other important topics are implicit differentiation and how to find the slope of the tangent line to a curve defined parametrically. As always you should know how to find the slope of the tangent line to $y = f(x)$ at a point $(a, f(a))$, and how to find the instantaneous rate of change of $f(x)$ with respect to x, and how to find

$$\lim_{\Delta x \to 0} \frac{f(x + \Delta x) - f(x)}{\Delta x}$$

You should also know the limits

$$\lim_{x \to 0} \frac{\sin x}{x} \quad \text{and} \quad \lim_{x \to 0} \frac{\cos x - 1}{x}$$

needed to find the derivative of $\sin x$ and of $\cos x$.

Know also what derivatives have to do with marginal costs, velocity, acceleration, and speed.

Almost every problem on the exam comes from the suggested exercises.