640:151 Calculus II, Spring 2012
Exam #1 Part I Questions

A typical 80-minute midterm consists of 2 "Part I" questions and 4-7 "Part II" questions, 12-16 points each. Answers given without any explanation or justification (words, phrases/sentences, and algebraic steps) may be given minimal credit.

PART I - CALCULUS I CONCEPTS
Two questions similar to the types listed below will be chosen

1. Draw a graph for each function, and state the domain/range

   $\sin x \qquad \cos x \qquad \tan x \qquad \csc x \qquad \sec x \qquad \cot x$

2. Give the definition for each function, draw a graph, and state the domain/range

   $\arcsin x \qquad \arccos x \qquad \arctan x$

3. Give the definition for each function, draw a graph, and state the domain/range

   $\sinh x \qquad \cosh x \qquad \tanh x \qquad \operatorname{csch} x \qquad \operatorname{sech} x \qquad \coth x$

4. Determine whether the function is increasing, decreasing, even, odd or none of the above

   $\dfrac{n^2}{2^n} \qquad 3^x \qquad \pi \sin(t+1) \qquad v^4 - 3v^2 \qquad e^{-x^2} \qquad \ln \dfrac{1}{q}$

5. Determine the limit

   $\lim\limits_{x \to -1^+} \dfrac{1}{x+1} \qquad \lim\limits_{x \to \infty} \dfrac{x^5 + x^2 + 10}{4x^5 + x^4 + x + 1} \qquad \lim\limits_{x \to b} \dfrac{x^3 - b^3}{x - b} \qquad \lim\limits_{x \to 0} \dfrac{\sin x}{x}$

6. Calculate the derivative

   $\ln(\sinh z) \qquad z \csc(e^{5z+1}+17) \qquad \dfrac{x^4 + \sqrt{x}}{x^2} \qquad (t+1)^3(1+\dfrac{1}{t})^{4/5} \qquad 5^{\arcsin r}$

7. State the antiderivative

   $\ln x \qquad \tan x \qquad \sec \theta \qquad \dfrac{1}{1+s^2} \qquad 5^r \qquad \csc z \cot z \qquad \dfrac{1}{u}$