This exam covers the material of Chapter 2 in the textbook *Thomas' Calculus*. For this exam, you should be prepared to:

1. Write the formal definition for $\lim_{x\to x_0} f(x) = L$.
2. Write a limit proof using the definition; a so called $\epsilon - \delta$ proof.
3. Apply the limit laws of Theorem 1 Section [2.2].
4. Use the fact that for every number c in the function's domain
$$\lim_{x\to c} \sin x = \sin c$$
$$\lim_{x\to c} \cos x = \cos c$$
$$\lim_{x\to c} \tan x = \tan c$$
$$\lim_{x\to c} \sec x = \sec c$$
$$\lim_{x\to c} \csc x = \csc c$$
$$\lim_{x\to c} \cot x = \cot c.$$
5. Use the facts that
$$\lim_{x\to 0} \frac{\sin x}{x} = 1,$$
and
$$\lim_{x\to 0} \frac{1-\cos x}{x} = 0.$$
6. Find limits when f is a function of x and $x \to \infty$.
7. Write the formal definition for continuity of a function at a point.
8. Determine for what values a given function is (is not) continuous.
9. "Repair", when possible, a function with discontinuities at one or several points.
10. State and use the Intermediate Value Theorem.