

MAT 136 (Calculus I), Prof. Jim Swift
Worksheet 7, on Continuity and Algebraic Limits.

1. The function $f(x) = e^{\cos(x)}$ is continuous on the set of all real numbers. Evaluate the limit.

$$\lim_{x \rightarrow 1} e^{\cos(x)} =$$

2. The function $f(x) = e^{-1/x^2}$ is continuous on its domain. Note that $f(0)$ is undefined. Can we conclude that $\lim_{x \rightarrow 0} f(x)$ DNE? Why or why not?

3. Consider the function f defined by $f(x) = \frac{x^2-4}{x-2}$.

(a) What is the default domain of f ?

(b) Find a function \tilde{f} such that:

- The domain of \tilde{f} is all real numbers, and
- $f(x) = \tilde{f}(x)$ for all x in the domain of f .