

Math 1260 Quiz #11 - June 15, 2006

1. The function  $f(x)$  is *continuous at  $x=c$*  if...

$\lim_{x \rightarrow c} f(x)$  exists,  $f(c)$  is defined, and these two numbers are equal.

2. Find  $k$  to make  $f(x)$  continuous:

$$f(x) = \begin{cases} x^2 + kx & \text{if } x < 3, \\ 2x - k & \text{if } x \geq 3. \end{cases}$$

For this function to be continuous it only needs to be continuous at  $x = 3$ , any other  $x$  value it is clearly continuous. To make this hold we need the two pieces to agree at  $x = 3$  so plug in 3 and set them equal:

$$\begin{aligned} 3^2 + 3k &= 6 - k \\ 3 &= -4k \\ -3/4 &= k \end{aligned}$$