NAME:

Quiz 3: No calculators. Justify all answers. No partial credit is given for an answer that is both unexplained and incorrect.

1. (2pts) What does it mean for a real function f to be continuous at 11?

   It means the function is defined at 11 and the limit $\lim_{x\to 11} f(x)$ exists and they are equal:

   $$\lim_{x\to 11} f(x) = f(11)$$

2. (3pts) Find the value of the number a that makes the function g defined below continuous.

   $$g(x) = \begin{cases} \sqrt{x} - 5 & \text{if } x \geq 4 \\ ax & \text{if } x < 4 \end{cases}$$

   In order to be continuous at 4, the function must satisfy

   $$-3 = \sqrt{4} - 5 = \lim_{x\to 4^-} g(x) = \lim_{x\to 4^+} g(x) = a4$$

   so it must be that $a = -\frac{3}{4}$.