

## Homework2

1. For what values of  $a$  and  $b$  is

$$f(x) = \begin{cases} -2, & \text{if } x \leq -1 \\ ax - b, & \text{if } -1 < x < 1 \\ 3, & \text{if } x \geq 1 \end{cases}$$

continuous at every  $x$ ?

2. Verify that the Intermediate Value Theorem applies to the indicated interval and find the value of  $c$  guaranteed by the theorem

$$f(x) = x^2 - 2x - 3, \text{ on the interval } [0, 4], \text{ where } f(c) = 0$$

3. Find the limits

$$(a) \lim_{x \rightarrow 0^+} \frac{1}{3x}$$

$$(b) \lim_{x \rightarrow -5^-} \frac{3x}{2x + 10}$$