

(a) The slope coming from the left =  $\frac{2}{3}$   
 The slope coming from the right  $\approx -1$   
 slopes differ,  $f'(c)$  does not exist

(b) avg rate of change = slope of secant line. where is the y-coordinate = 1? between  $x = -2$  and  $x = -1$  at about  $x = 1$  2

(c) Consider avg rate of change on  $(3, 6)$   
 $\frac{1-0}{6-3} = \frac{1}{3}$  so there must be a pt on  $(3, 6)$  with  $f'(c) = \frac{1}{3}$  by MVT

(d)  $g$  is concave up when  $g'' > 0$   
 $g''(x) = f(x)$        $g''(x) = f'(x)$   
 $g'' > 0$  when  $f' > 0$        $(-4, 0)$  and  $(3, 6)$