8. A continuous function f, defined for all x, is always decreasing and concave up. Suppose $f(6) = -6$ and $f'(6) = -1.5$.

   (a) (2 points) How many zeros does f have? Justify your answer.

   (b) (2 points) Can $f'(2) = -1$? Justify your answer.

   (c) (4 points) Circle all intervals below in which f has at least one zero. Justify your choices with a picture and a short description.

      i. $(-\infty, -6)$

      ii. $[-6, -2)$

      iii. $[-2, -1)$

      iv. $[-1, 1)$

      v. $[1, 2)$

      vi. $[2, 6)$

      vii. $[6, \infty)$