

## Quiz

Name: \_\_\_\_\_

To receive credit on these problems you have to show your work.

1. Let  $S(r) = 2r - r^2$ . Compute  $\Delta S$  as  $r$  changes from  $-1$  to  $-1 + \Delta r$  and use this to compute the exact rate of change  $S'(-1)$  by finding  $\lim_{\Delta r \rightarrow 0} \frac{\Delta S}{\Delta r}$ .

Answer: \_\_\_\_\_

2. Assume that the number  $K$  of acres of kudzu in the city of Columbia satisfies the rate equation  $K' = .001K(200 - K)$  where  $K'$  is measured in acres per year. If at the beginning of the year there are 100 acres of kudzu, then estimate how many acres there are six months later.

Answer: \_\_\_\_\_