

7. [5 points] Let

$$s(t) = \begin{cases} 5t^2 & \text{if } t \leq 3 \\ p + c(t - 3) & \text{if } t > 3 \end{cases}$$

be a differentiable function, where  $p$  and  $c$  are constants.

- a. [3 points] Find the values of  $p$  and  $c$ .

**Answer:**  $p =$  \_\_\_\_\_ and  $c =$  \_\_\_\_\_

- b. [2 points] Is  $s'(t)$  differentiable at  $t = 3$ ?

To receive any credit on this question, you must justify your answer.

8. [6 points] Find a formula for  $\frac{dy}{dx}$  for the implicit function  $ax^2 + xy^2 + b \ln y = c$ .  
The constants  $a$ ,  $b$ , and  $c$  may appear in your answer.

**Answer:**  $\frac{dy}{dx} =$  \_\_\_\_\_