

Time Limit: 5 minutes

Instructions: Open notes. Calculator allowed. Closed book.

Instructions for all quizzes: **Do not discuss any aspect of this quiz with other midshipmen until after 6th period.**

Print your last name above. Also, fill in the bubble for your section.

Fill the bubble for the correct answer. Also, write your answers in any blanks provided.

Your work will not be graded unless requested.

Suppose that

$$u = x^4y + y^2z^3$$

and

$$x = rse^t, \quad y = rs^2e^{-t}, \quad z = r^2s \sin(t).$$

Find the value of $\frac{\partial u}{\partial s}$ when $r = 2$, $s = 1$, $t = 0$.

Answer: 192 PUT YOUR WORK BELOW

See full solution on text page 904, Example 5.

Key steps:

1. Draw a tree diagram (3 points)
2. Write down the Chain Rule for $\partial u / \partial s$. (3 points)
3. Find partial derivatives.
4. Plug in $(r, s, t) = (2, 1, 0)$. You should compute $(x, y, z) = (2, 2, 0)$, which makes it much easier to plug in the numbers to get the final answer.