

Quiz 8 Outline

Format. This quiz has **1 multiple choice** question and **3 short-answer** questions.

1. Decide the growth rate of a population at a given time.

Example: If an initial population of 100 bacteria doubles in size every hour, what is the rate, in bacteria per hour, at which the population is growing after two hours?

- (a) $100 \cdot e^2$
- (b) $100 \cdot \ln(4)$
- (c) $100 \cdot \ln(2)$
- (d) $100 \cdot \ln(2) \cdot 2$
- (e) $100 \cdot \ln(2) \cdot 4$

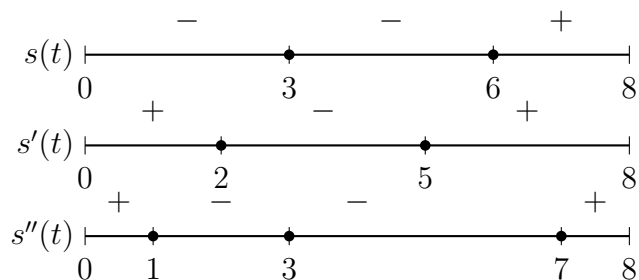
2. Compute the derivative of an inverse trigonometric function.

Example: Find the derivative of $f(x) = \arcsin(7x^2)$.

Answer:

3. Use a sign chart to answer a question about the motion of a particle.

Example:



In the chart, $s(t)$ is the position function of a particle. The dots are where the respective functions are equal to 0 and the sign of the functions is indicated by “+” and “−” above the number lines. According to the sign chart above, list the interval(s) on which the particle is *slowing down*.

Answer:

4. Compute the derivative of a function using logarithmic differentiation.

Example: Find the derivative of $y = x^{e^x}$.

Answer: