Instructions. This quiz will be graded for accuracy, out of 10 points. Calculators, books, notes and suchlike aides to gracious living are not permitted. Make sure to show all your work for full credit.

For numbers 1 and 2 only: Compute the derivatives and do not simplify your answers. You may use the derivative rules.

1. (1 point)
   \[ \alpha = 8e^{[\sin(\pi/4)]^2} \]

2. (3 points)
   \[ f(\theta) = \frac{5 \cos \theta}{\sqrt{\theta^3} + e^\theta} \]

3. (1 point) Fill in the blank:

   If \( f \) is differentiable at \( x = a \),

   then \( \lim_{{x \to a}} f(x) = \) ______________.
4. (a) (1 point) Fill in the blank:

\[ f'(x) = \lim_{h \to 0} \]

(b) (4 points) Now find \( f'(x) \) of the function below using the limit definition of derivative:

\[ f(x) = \frac{1}{\sqrt{x + 5}} \]