

1. [7 points] Let

$$g(w) = 1 - \frac{e^w}{6w}.$$

a. [2 points] Evaluate each of the limits below. If a limit does not exist, including if it diverges to  $\pm\infty$ , write DNE. You do not need to show work.

i.  $\lim_{w \rightarrow \infty} g(w)$

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

ii.  $\lim_{w \rightarrow -\infty} g(w)$

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

b. [5 points] Use the limit definition of the derivative to write an explicit expression for  $g'(3)$ . *Your answer should not involve the letter  $g$ . Do not attempt to evaluate or simplify the limit.* Write your final answer in the answer box provided below.

**Answer:**  $g'(3) =$