1. [19 points] The graphs of the functions \( f(x) \) and \( g(x) \) are shown below.

Note that the graph of \( f(x) \) is linear for \( x < -2 \) and \( x > 2 \), and \( g(x) \) is linear on \( -3 < x < 1 \) and \( 1 < x < 3 \).

For each of the following parts, find the given limit. If any of the quantities do not exist (including the case of limits that diverge to \( \infty \) or \( -\infty \)), write DNE. If the limit cannot be found based on the information given, write NOT ENOUGH INFO. You do not need to show any work.

a. [2 points] Find \( \lim_{x \to -1} f(x) \).

Answer: \( 2 \)

b. [2 points] Find \( \lim_{t \to 2^-} 2(f(t) - 3) \).

Answer: \( 4 \)

c. [2 points] Find \( \lim_{x \to 1} f(x)g(x) \).

Answer: DNE

d. [2 points] Find \( \lim_{x \to \infty} f(e^{-x}) \).

Answer: \( 1 \)

e. [2 points] Find \( \lim_{x \to 2^+} g^{-1}(x) \).

Answer: \( -1 \)

f. [2 points] Find \( \lim_{h \to 0} \frac{f(3 + h) - f(3)}{h} \).

Answer: \( 0.5 \)
The graphs of the functions $f(x)$ and $g(x)$ are included here for your convenience.

\[ y = f(x) \]

\[ y = g(x) \]

**g.** [3 points] Find all the values of $x$ with $-5 < x < 4$ at which the function $f(x)$ is not continuous.

**Answer:** $-2, 0, 2$

**h.** [2 points] What is the range of $y = g(x)$?

**Answer:** $[0, 5]$

**i.** [2 points] For which of the following values of $x$ is $f'(x) > 0$? Circle all that apply.

- $x = -5$
- $x = -1$
- $x = 1.5$
- $x = e$
- NONE OF THESE