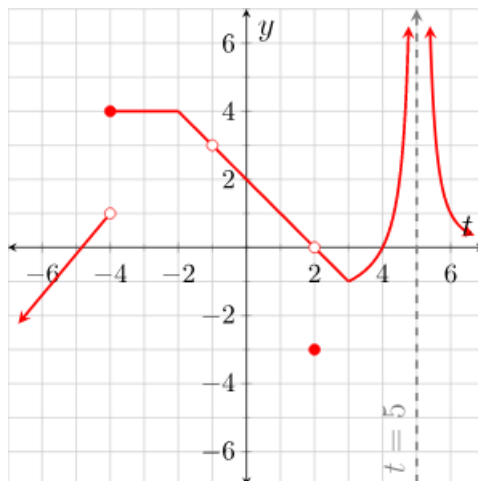# MTH 251
## LAB §2.4

DAMIEN ADAMS

1. Use the graph of $y = h(t)$ is provided below.



a. Complete the following table.

| $a$ | $h(a)$ | $\lim\limits_{t\to a^-} h(t)$ | $\lim\limits_{t\to a^+} h(t)$ | $\lim\limits_{t\to a} h(t)$ |
|---|---|---|---|---|
| $-4$ | | | | |
| $-1$ | | | | |
| $2$ | | | | |
| $3$ | | | | |
| $5$ | | | | |

b. State the value(s) of $t$ at which the function $h$ is discontinuous. Describe in detail why the function is discontinuous at that value.

c. State the value(s) of $t$ where the function $h$ is continuous from the right but not from the left.

d. State the value(s) of $t$ where the function $h$ is continuous from the left but not from the right.

e. State the value(s) of $t$ where the function $h$ has a removable discontinuity.

f. State the value(s) of $t$ where the function $h$ has a jump discontinuity.

g. State the value(s) of $t$ where the function $h$ has an infinite discontinuity.

h. Determine if the statement is True or False. If the statement is True, please write "True". If the statement is False, please write "False". (Do not write "T" or "F"; please write the full word)

   I. $h$ is continuous on $[-4, -1)$.
   II. $h$ is continuous on $(-4, -1)$.
   III. $h$ is continuous on $(-4, -1]$.
   IV. $h$ is continuous on $(-1, 2]$.

   V. $h$ is continuous on $(-1, 2)$.
   VI. $h$ is continuous on $(-\infty, -4)$.
   VII. $h$ is continuous on $(-\infty, -4]$.

2. Let $f(x) = \begin{cases} \dfrac{5}{x-10} & x \leq 5 \\[2mm] \dfrac{5}{5x-30} & 5 < x < 7 \\[2mm] \dfrac{x-2}{12-x} & x > 7 \end{cases}$ .

For which values of $x$ is the function $f$ discontinuous? Justify your conclusion by showing all relevant work.