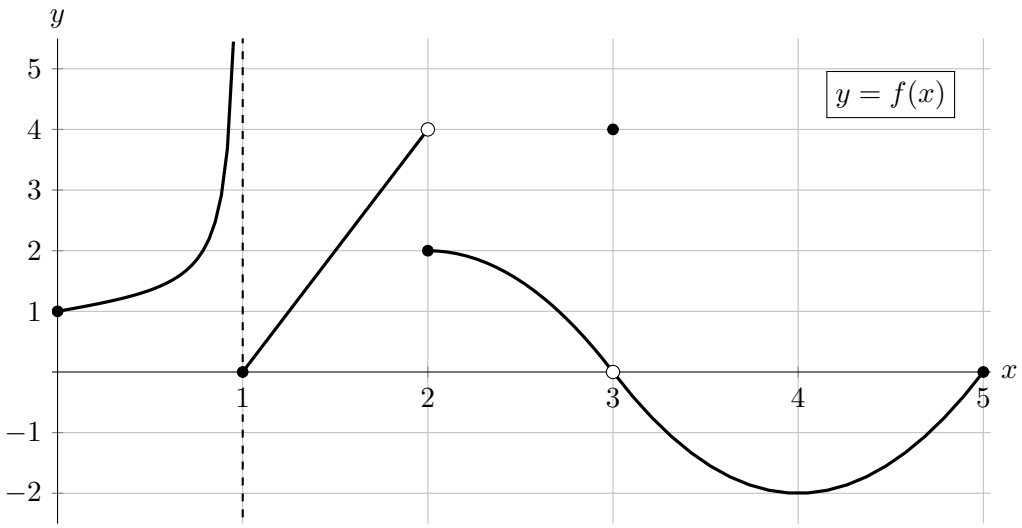
6. [11 points] Below is a portion of the graph of an <u>even</u> function $f(x)$, which has domain $(-\infty, \infty)$ even though the graph below only shows the function on the interval $[0, 5]$. Note that $f(x)$ has a vertical asymptote at $x = 1$.



a. [1 point] At which of the following values of x is $f(x)$ continuous? Circle all correct answers.

$x = 1$ $\quad$ $x = 2$ $\quad$ $x = 3$ $\quad$ $\boxed{x = 4}$ $\quad$ NONE OF THESE

b. [8 points] Find the **exact** numerical value of each expression below, if possible. For any values that do not exist, including if they are limits that diverge to $\pm\infty$, write DNE. If there is not enough information to find a given value or determine whether it exists, write NEI.
You do not need to show work. As a reminder, $f(x)$ is an <u>even</u> function.

$f(f(3)) = -2$

$\lim_{x\to 0^-} f(x) = 1$

$\lim_{x\to 2} f(x) = \text{DNE}$

$\lim_{x\to 6^+} \dfrac{f(x-2)}{f\left(\frac{x}{3}\right)} = -1$

$\lim_{x\to 3} f(x) = 0$

$\lim_{x\to 2^-} f(-x) = 4$

$\lim_{x\to 1^-} \dfrac{1}{f(x)} = 0$

$\lim_{h\to 0} \dfrac{f(1.5+h) - f(1.5)}{h} = 4$

c. [2 points] Consider the function $G(x) = -f(x+3)$. Which of the following must be a vertical asymptote of $G(x)$? There is only one correct answer.

$x = -3$ $\quad$ $\boxed{x = -2}$ $\quad$ $x = -1$ $\quad$ $x = 1$ $\quad$ $x = 4$