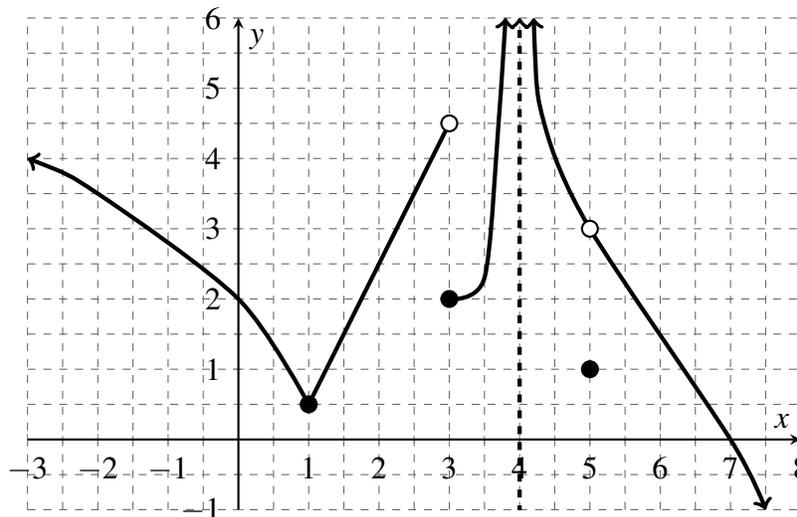


Name: _____

_____ / 25

There are 25 points possible on this quiz. No aids (book, calculator, etc.) are permitted. **Show all work for full credit.**

1. [11 points] Use the graph of the function $H(x)$ (drawn below) to answer the questions. Assume $H(x)$ has a vertical asymptote at $x = 4$. For each problem below, give the most complete answer; if the limit is infinite, indicate that with ∞ or $-\infty$. If a value does not exist, write DNE.



a. $f(1) =$ _____

b. $f(3) =$ _____

c. $f(5) =$ _____

d. $\lim_{x \rightarrow 3^-} f(x) =$ _____

e. $\lim_{x \rightarrow 3^+} f(x) =$ _____

f. $\lim_{x \rightarrow 3} f(x) =$ _____

g. $\lim_{x \rightarrow 4} f(x) =$ _____

h. $\lim_{x \rightarrow 5} f(x) =$ _____

i. $\lim_{x \rightarrow 7} f(x) =$ _____

- j. List all x -values for which the function $H(x)$ fails to be continuous.

2. [10 points] Evaluate the following limits. Give the most complete answer; if the limit is infinite, indicate that with ∞ or $-\infty$. If a value does not exist, write DNE. You must show work to receive full credit.

a. $\lim_{x \rightarrow 4} \frac{2x^2 - 8x}{x^2 - x - 12}$

b. $\lim_{x \rightarrow 1} \frac{\sqrt{3+x} - 2}{x - 1}$

c. $\lim_{x \rightarrow -2^+} \frac{5x}{x + 2}$

d. Given $\lim_{x \rightarrow 10} f(x) = 5$ and $\lim_{x \rightarrow 10} g(x) = -3$, evaluate $\lim_{x \rightarrow 10} 2 \left(\frac{x + 1}{f(x) + g(x)} \right)$.

3. [4 points] Use the Intermediate Value Theorem to show that the polynomial $p(x) = x^3 - x + 2$ must reach a y-value of 5 for some x-value on the interval $[1, 2]$.