Name: ——————————————————————————— —————— / 25

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

1. **[16 points]** (4 pts each; 2 pts for answer, 2 pts for work) 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.

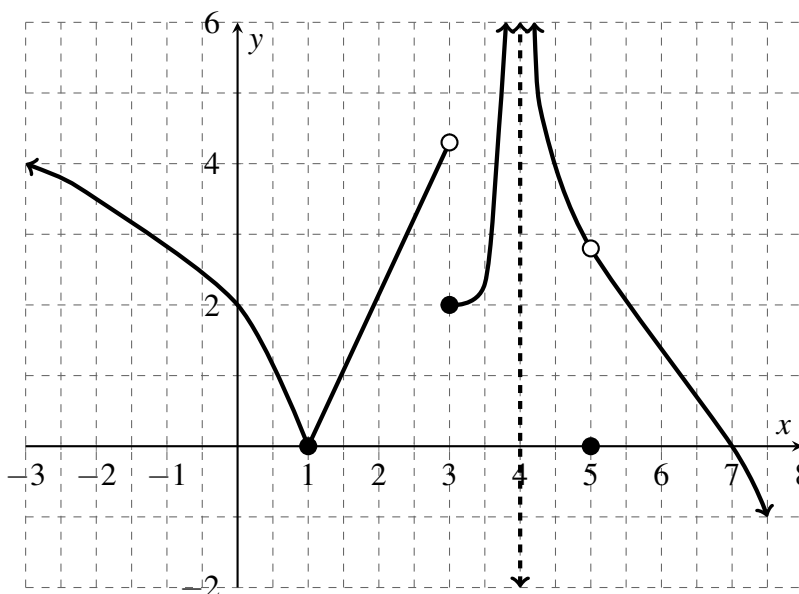   **a.** $\displaystyle\lim_{x\to 2} \frac{x^2-4}{x^2-5x+6}$

   b. $\displaystyle\lim_{h\to 0} \frac{\frac{3}{2}-\frac{3}{2+h}}{h}$

   c. Make sure to give some justification for your answer here. $\displaystyle\lim_{t\to -3^+} \frac{5+t}{t^2+3t}$

   d. Given $\displaystyle\lim_{x\to 5} f(x) = 8$ and $\displaystyle\lim_{x\to 5} g(x) = -10$, evaluate $\displaystyle\lim_{x\to 5} \frac{3f(x)-x}{(g(x))^2}$.

2. **[4 points]** Does the equation $x - \sin(\pi x) - 3 = 0$ have a solution on the interval from $x = 0$ to $x = 5$? Use the Intermediate Value Theorem to justify your answer.

3. **[5 points]** Consider the graph of the function $y = H(x)$ shown in the graph below.

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

    b. Label the values above as removable or nonremovable.