Name: —————————————————————————————————   ——————— / 25
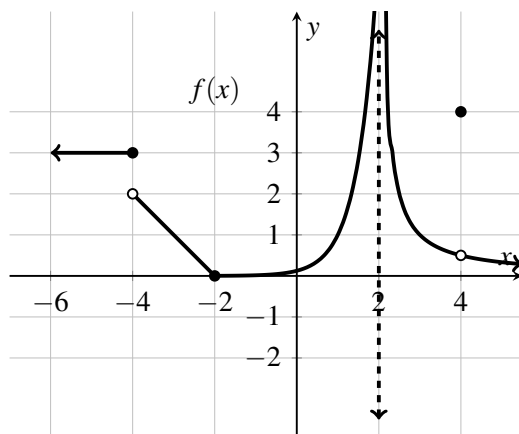
Please circle your instructor's name: James Gossell   Gordon Williams

There are 25 points possible on this quiz. Any outside materials are not allowed. **For full credit, show all work clearly.**

1. **[10 points]** Use the graph of the function $f(x)$ to answer each question. If the limit is infinite, indicate that with ∞ or $-\infty$. If the value does not exist or is undefined, write DNE.

   a. $\displaystyle\lim_{x\to-4^-} f(x) =$ ——————   **b.** $\displaystyle\lim_{x\to-4^+} f(x) =$ ——————   **c.** $\displaystyle\lim_{x\to-4} f(x) =$ ——————

   d. $\displaystyle\lim_{x\to2^+} f(x) =$ ——————   **e.** $f(4) =$ ——————   **f.** $\displaystyle\lim_{x\to4} f(x) =$ ——————

   g. Write the domain of $f(x)$: —————————————————————————————

   h. List all x-values for which $f(x)$ is **not** continuous. For each of your answers, classify the discontinuity as **jump**, **removable**, **infinite**, or **other**.

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2. **[5 points]** Determine whether the given function is continuous at $x = 0$. Justify your answer **using limits**.

$$g(x) = \begin{cases} x^2 - e^x, & x < 0 \\ 1 - x, & x \geq 0 \end{cases}$$

3. **[8 points]** Evaluate the limits algebraically. Show all work.

a. $\displaystyle\lim_{x\to 3}\frac{x^2-x-6}{12-4x}=$

b. $\displaystyle\lim_{x\to 4}\frac{3x-12}{\sqrt{x}-2}=$

4. **[2 points]**

Evaluate the limit below. **Circle one answer from Part I and one justification from Part II.**

$$\lim_{x\to 3^-}\frac{2x-7}{x^2-9}$$

Value of the Limit (Circle one)

$$-\infty \qquad\qquad +\infty \qquad\qquad 0$$

Justification (Circle one) As x approaches 3 from the left...

(A) ...the numerator is positive and the denominator is slightly bigger than 0.

(B) ...the numerator is positive and the denominator is slightly smaller than 0.

(C) ...the numerator is negative and the denominator is slightly bigger than 0.

(D) ...the numerator is negative and the denominator is slightly smaller than 0.

(E) ...the limit is 0 because the denominator is equal to 0.