MTH 251
LAB §2.2

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Name: _____

I encourage you to work with others and use a calculator when necessary. Write clearly, and if you work with others, make sure that your work is your own. Box all answers/conclusions, show your work, don't forget to include units, and answer any "word problems" with a self-contained sentence. Good luck, and may the Force be with you!

1. Use the graph of the function f provided below to evaluate the following limits.

a. $\lim_{x\to -5^-} f(x) =$ _____

b. $\lim_{x\to -5^+} f(x) =$ _____

c. $\lim_{x\to -5} f(x) =$ _____

d. $\lim_{x\to 0^-} f(x) =$ _____

e. $\lim_{x\to 0^+} f(x) =$ _____

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

g. $\lim_{x\to 2^-} f(x) =$ _____

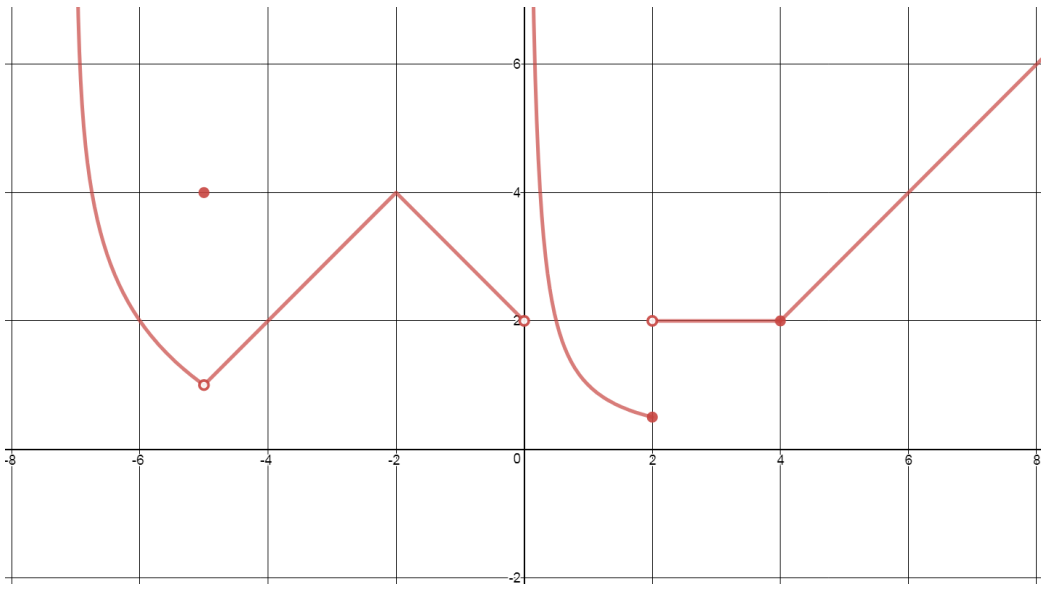
h. $\lim_{x\to 2^+} f(x) =$ _____

i. $\lim_{x\to 2} f(x) =$ _____

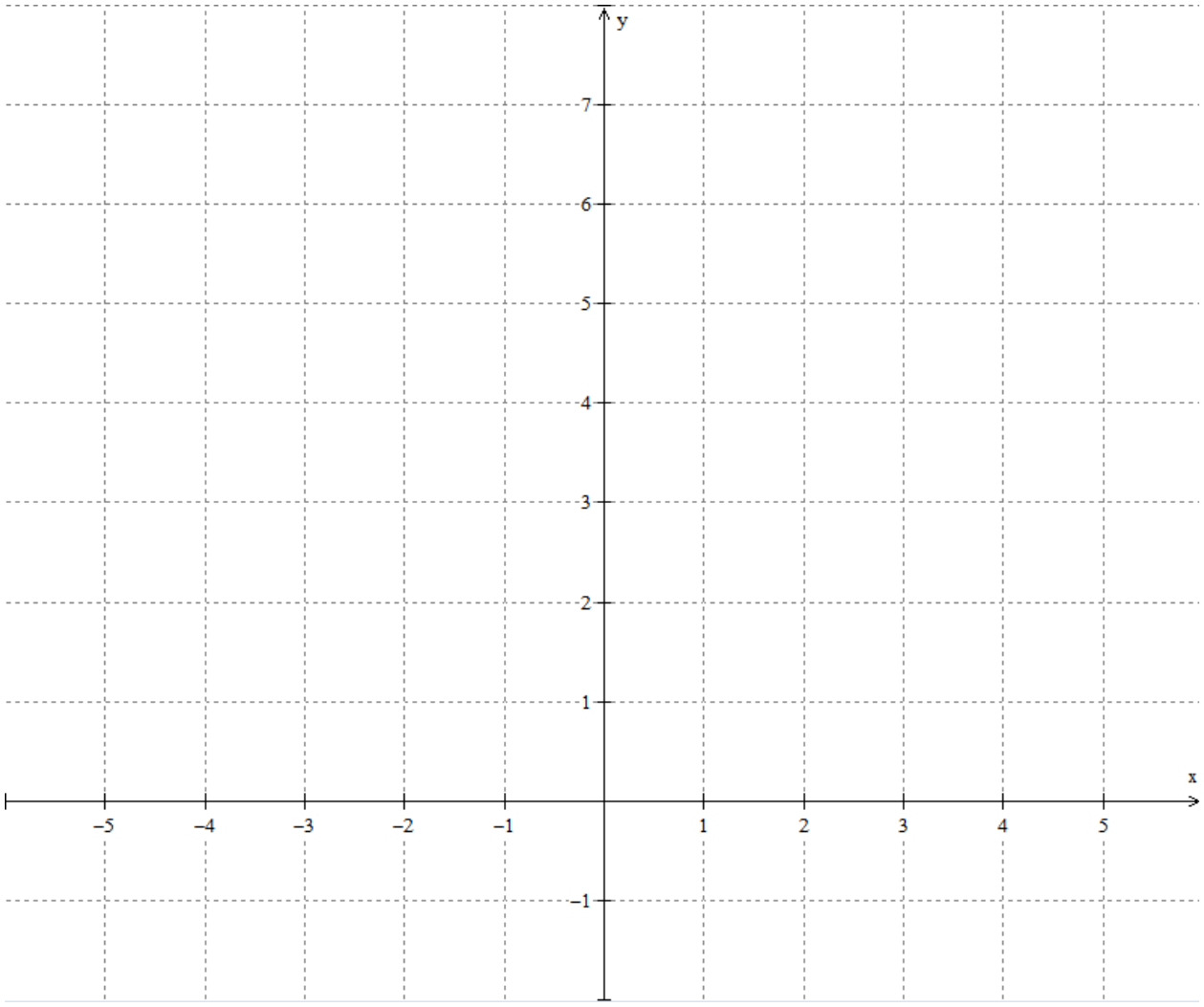
j. $\lim_{x\to 4^-} f(x) =$ _____

k. $\lim_{x\to 4^+} f(x) =$ _____

l. $\lim_{x\to 4} f(x) =$ _____



2. Sketch a function f satisfying the following conditions.
   - $\lim_{x \to -4^-} f(x) = -\infty$
   - $\lim_{x \to -4^+} f(x) = \infty$
   - $\lim_{x \to 0} f(x) = 0$
   - $\lim_{x \to 3^-} f(x) = 2$
   - $\lim_{x \to 3^+} f(x) = 4$
   - $f(3) = 4$
   - $f(0) = -1$



3. Determine the following limits numerically (using a table of values).

   a. $\lim\limits_{x\to 3} \dfrac{x^2-5x+10}{x-3}$

   b. $\lim\limits_{z\to 2^+} (\sqrt{z^2-4z+4}-z+2)$

   c. $\lim\limits_{\theta\to 0} \dfrac{\tan\theta}{\theta}$

4. Determine the following limits numerically (using a table of values).
   a. $\lim_{t\to 3^-} \dfrac{t^3-27}{|t-3|}$

   b. $\lim_{t\to 3^+} \dfrac{t^3-27}{|t-3|}$

   c. $\lim_{t\to 3} \dfrac{t^3-27}{|t-3|}$