Books, notes (in any form), and calculators are not allowed. *Show all your work.* Good Luck!
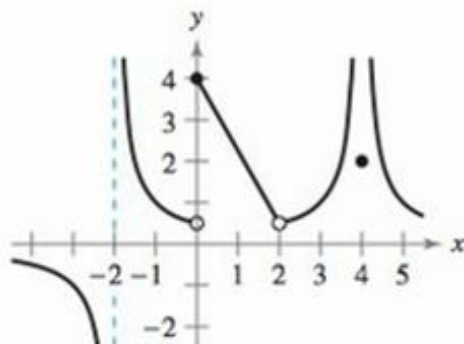
1. (3 pts) Given the graph of $f(x)$ above, state the value of each quantity below, if it exists. Clearly indicate $+\infty$ or $-\infty$ in the case of an infinite limit. If the quantity does not exist, state DNE.

(a). $\lim\limits_{x \to -2^-} f(x)$

(b). $\lim\limits_{x \to 2} f(x)$

(c). $f(4)$

2. (2 pts) For the same function $f(x)$ given above, explain why the function is discontinuous at $x = 4$. i.e., Explain which of the three conditions from the definition of continuity do not hold. [Stating what type of discontinuity is not sufficient.]

3. (10 pts) Evaluate the following limits, if they exist. Clearly indicate $+\infty$ or $-\infty$ in the case of an infinite limit. If the limit does not exist, clearly explain the reason why.

(a). $\displaystyle\lim_{x \to 4} \frac{x^2 - 4x}{x^2 - 2x - 8}$

(b). $\displaystyle\lim_{x \to 1} \frac{1 - 2x}{x - 1}$