MAT 161   Names_____
Section 2-3 problems

1. State whether each of the following are true or false. Justify your response with words and/or a graph.
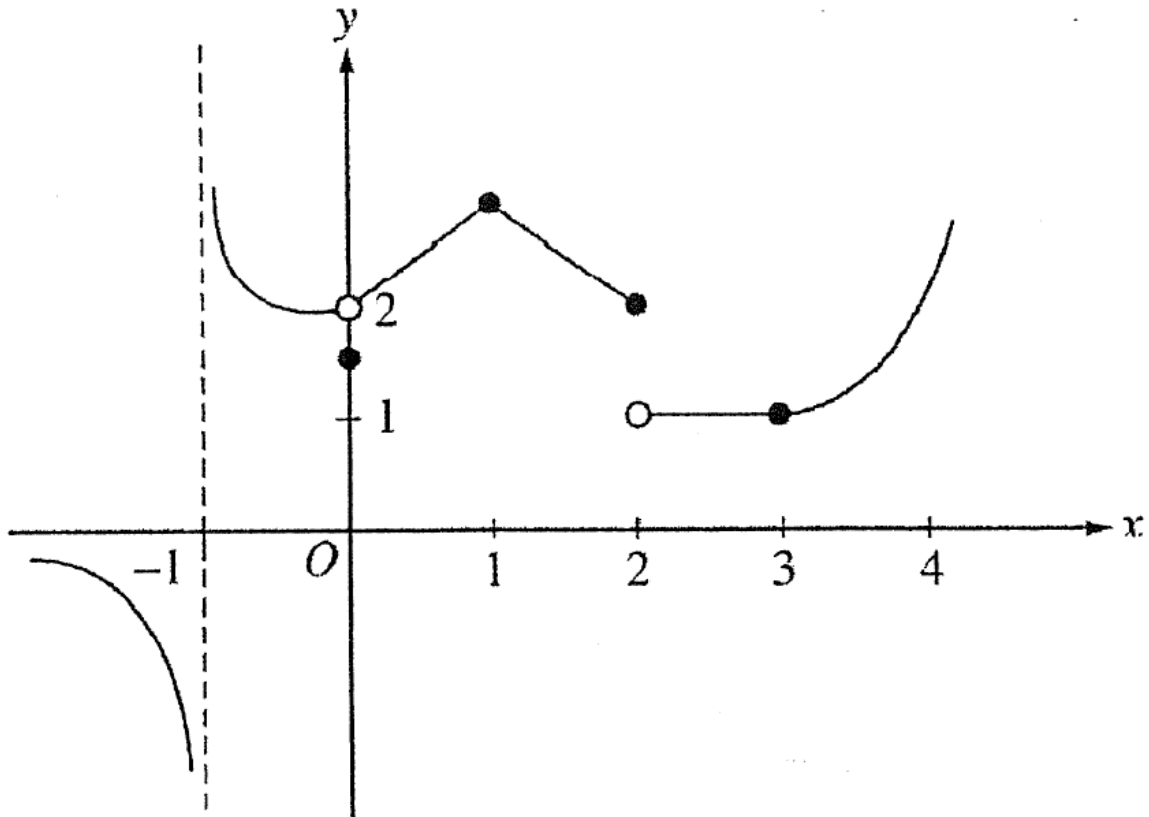

a) If $\lim\limits_{x \to a} f(x)$ exists, then $f(x)$ is continuous at $x=a$.

b) If $\lim\limits_{x \to a} f(x)$ exists, then $f(a)$ is defined.

c) If $f(x)$ is continuous at the point $x = a$, then $\lim\limits_{x \to a} f(x)$ exists.

d) If $f(x)$ is continuous at $x = a$, then $f'(a)$ exists.

2. Use the graph of $f(x)$ below to answer the following:

a. $\lim\limits_{x\to-1} f(x)$

b. $\lim\limits_{x\to 0} f(x)$

c. $\lim\limits_{x\to 2^+} f(x)$

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

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

3. . Find the limits in a through d

a) $\lim\limits_{x\to 0} \dfrac{\sqrt{4+x}-2}{x}$

c) $\lim\limits_{x\to 0} \dfrac{e^x - e^{2x}}{1-e^x}$

b) $\lim\limits_{x\to 2} \dfrac{\sqrt{x^2-1}-\sqrt{x+1}}{x-2}$

d) $\lim\limits_{x\to 4} \dfrac{1}{\sqrt{x}-2} - \dfrac{4}{x-4}$