

Aim: Limits—An Intuitive Approach

I. Do Now:

1. Given the sequence: $\frac{3}{3}, \frac{7}{5}, \frac{11}{7}, \frac{15}{9}, \dots$

- (a) Find the next three terms. (b) Find a_n . (c) What number does the sequence appear to be approaching?

2. You are given 24 inches of wire and asked to build a rectangle with maximum area. What dimensions should the rectangle have?

Width	5.0	5.5	5.9	6	6.1	6.5	7.0
Area							

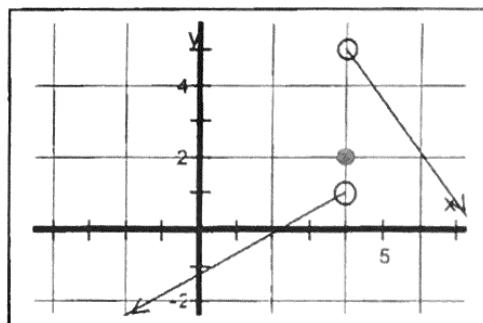
II. Development: In example #2, we say that the limit of A as w approaches 6 is _____.

This is written as: _____

III. Further Development:

3. Consider the graph on the right.

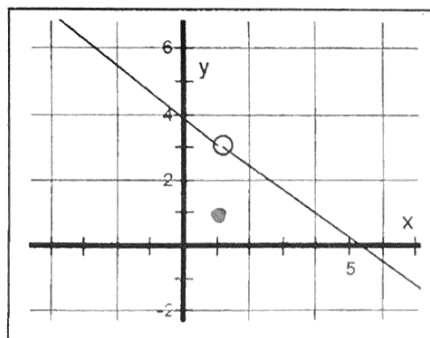
- (a) Why “type” of function is it?
- (b) As x approaches 4 from the *left*, what does $f(x)$ (or y) approach?
- (c) As x approaches 4 from the *right*, what does $f(x)$ (or y) approach?
- (d) Does $\lim_{x \rightarrow 4^-} f(x) = \lim_{x \rightarrow 4^+} f(x)$?



IV. Is there a connection between the limit and the value of the function at $x = 1$?

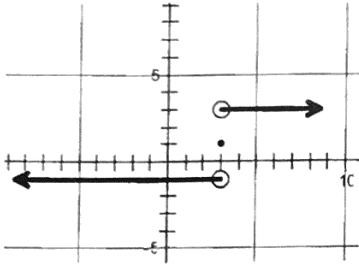
4. Compute the limits:

- (a) $\lim_{x \rightarrow 1^-} f(x)$
- (a) $\lim_{x \rightarrow 1^+} f(x)$
- (a) $\lim_{x \rightarrow 1} f(x)$



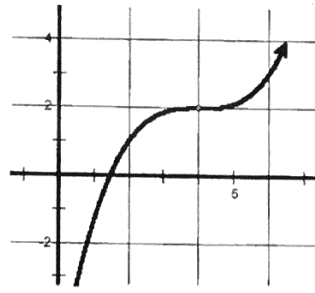
MPS22 Homework 50

1. for the function, f , graphed below, find



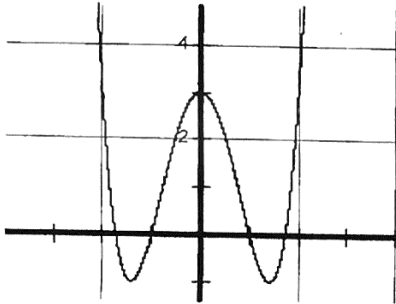
- a) $\lim_{x \rightarrow 3^-} f(x) =$
- b) $\lim_{x \rightarrow 3^+} f(x) =$
- c) $\lim_{x \rightarrow 3} f(x) =$
- d) $f(3) =$
- e) $\lim_{x \rightarrow -\infty} f(x) =$
- f) $\lim_{x \rightarrow +\infty} f(x) =$

2. for the function, f , graphed below, find



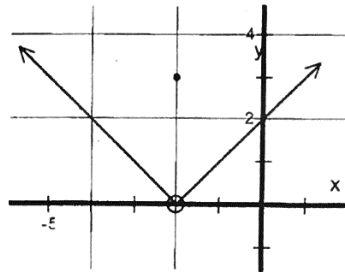
- a) $\lim_{x \rightarrow 4^-} f(x) =$
- b) $\lim_{x \rightarrow 4^+} f(x) =$
- c) $\lim_{x \rightarrow 4} f(x) =$
- d) $f(4) =$
- e) $\lim_{x \rightarrow -\infty} f(x) =$
- f) $\lim_{x \rightarrow +\infty} f(x) =$

3. for the function, f , graphed below, find



- a) $\lim_{x \rightarrow 0^-} f(x) =$
- b) $\lim_{x \rightarrow 0^+} f(x) =$
- c) $\lim_{x \rightarrow 0} f(x) =$
- d) $f(0) =$
- e) $\lim_{x \rightarrow -\infty} f(x) =$
- f) $\lim_{x \rightarrow +\infty} f(x) =$

4. for the function, f , graphed below, find



- a) $\lim_{x \rightarrow -2^-} f(x) =$
- b) $\lim_{x \rightarrow -2^+} f(x) =$
- c) $\lim_{x \rightarrow -2} f(x) =$
- d) $f(-2) =$
- e) $\lim_{x \rightarrow -\infty} f(x) =$
- f) $\lim_{x \rightarrow +\infty} f(x) =$

5. Find the 4 fourth roots of -16; plot roots on the graph (reminder: convert to *trig form* first) Label some of the angles, too!

