

1

Tuesday, August 28, 2012 (Day 2)

Discussing Limits (Section 3-1 in book)
Continuing graphical approach that we started
yesterday

Re-cast the definition of limit as a 3-part test.

For $\lim_{x \rightarrow c} f(x)$ to exist, the function must pass

this ~~is~~ 3-part test:

- (a) the left-sided limit $\lim_{x \rightarrow c^-} f(x)$ must exist
- (b) the right-sided limit $\lim_{x \rightarrow c^+} f(x)$ must exist
- (c) the values of the limits in (a) + (b) must match

Yesterday's examples were all of the form
graph of f \longrightarrow description of limit
behavior of f .

Now do a different kind of example.

description of
limit behavior
of f \longrightarrow Sketch a graph
of f

Example Sketch a graph that satisfies
all these conditions:

$$f(1) = 3$$

$$\lim_{x \rightarrow 1^-} f(x) = 4$$

$$\lim_{x \rightarrow 1^+} f(x) = 2$$

(this is like exercise 3-1#40)

Solution

~~Recap~~ Identify the locations that are mentioned in the problem.

$$(x, y) = (1, 3)$$

$$(x, y) = (1, 4)$$

$$(x, y) = (1, 2)$$

Plot those locations with open circles



