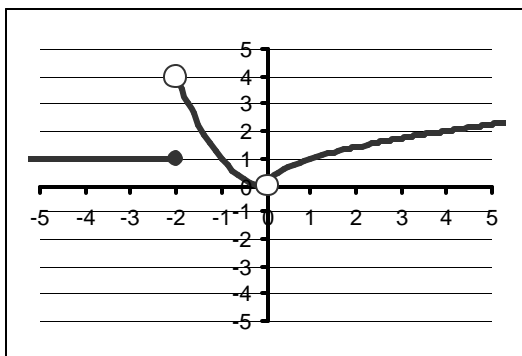


Math 160 – Sections 1.1- Limits

Problem (1) – You are given the graph of $y = f(x)$



b) Complete the following table:

| a | $f(a)$ | $\lim_{x \rightarrow a^-} f(x)$ | $\lim_{x \rightarrow a^+} f(x)$ | $\lim_{x \rightarrow a} f(x)$ | Is the function continuous at $x = a$ | Explain why or why not |
|-----|--------|---------------------------------|---------------------------------|-------------------------------|---------------------------------------|------------------------|
| -2 | | | | | | |
| -1 | | | | | | |
| 0 | | | | | | |
| 1 | | | | | | |

c) Answer each of the following:

- 3) Domain 2) Range 3) Write the formula(s) that define y

4) Intervals for which the function

| Constant | Increasing | decreasing |
|----------|------------|------------|
| | | |

- 5) $F(-3)$ 6) $F(-2)$ 7) $F(-1)$ 8) $F(0)$

- 9) $F(1)$ 10) $F(2)$ 11) $F(3)$

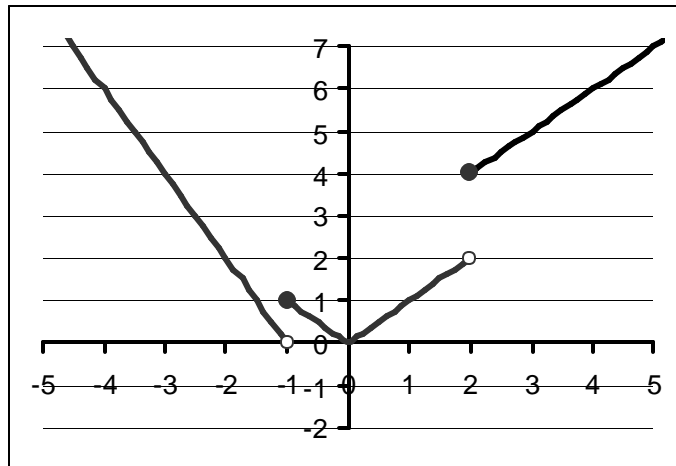
- 12) All x-intercepts 13) Y-intercept

- 14) All x for which $f(x) = 1$ 15) All x for which $f(x) = 0$

- 16) All x for which $f(x) > 0$ 17) All x for which $f(x) \geq 4$

- 18) All x for which the function intersects the line $y = 3$

Problem (2) – For the following function $f(x)$:



a) Complete the following table:

| a | $f(a)$ | $\lim_{x \rightarrow a^-} f(x)$ | $\lim_{x \rightarrow a^+} f(x)$ | $\lim_{x \rightarrow a} f(x)$ | Is the function continuous at $x = a$ | Explain why or why not |
|-----|--------|---------------------------------|---------------------------------|-------------------------------|---------------------------------------|------------------------|
| -2 | | | | | | |
| -1 | | | | | | |
| 0 | | | | | | |
| 1 | | | | | | |
| 2 | | | | | | |

b) Make up a few questions similar to the ones for problem (1)

3) Use the table to answer the questions – then, sketch graph

| X | Y1 |
|-------|--------|
| -1E-4 | ERROR |
| 0 | 2 |
| 1E-4 | 2.01 |
| 2E-4 | 2.0141 |
| 3E-4 | 2.0173 |
| 4E-4 | 2.02 |

X = -2E-4

$$\lim_{x \rightarrow 0^+} f(x) =$$

$$\lim_{x \rightarrow 0^-} f(x) =$$

$$\lim_{x \rightarrow 0} f(x) =$$

4) Use the table to answer the questions – then, sketch graph

| X | Y1 |
|-------|--------|
| 7.997 | 22.985 |
| 7.998 | 22.99 |
| 7.999 | 22.995 |
| 8 | 23 |
| 8.001 | 23.005 |
| 8.002 | 23.01 |
| 8.003 | 23.015 |

X = 7.997

$$\lim_{x \rightarrow 8^+} f(x) =$$

$$\lim_{x \rightarrow 8^-} f(x) =$$

$$\lim_{x \rightarrow 8} f(x) =$$

5) Use the table to answer the questions – then, sketch graph

| X | Y1 |
|--------|--------|
| -2.003 | -333.3 |
| -2.002 | -500 |
| -2.001 | -1000 |
| -2 | ERROR |
| -1.999 | 1000 |
| -1.998 | 500 |
| -1.997 | 333.33 |

X = -2.003

$$\lim_{x \rightarrow -2} f(x) =$$

Math 160 – Sections 1.1, 1.2 - Limits and Continuity

Sketch the graph of a function satisfying the given conditions

- 1) The limit of the function as x approaches 5 from the left is 3.
The limit of the function as x approaches 5 from the right is 7.
The value of the function at $x = 5$ is equal to 6.

Now Answer the following: Is the function continuous at $x = 5$? Explain

- 2) The limit of the function as x approaches 5 is 12.
The value of the function at $x = 5$ does not exist.

Now Answer the following: Is the function continuous at $x = 5$? Explain

- 3) The limit of the function as x approaches 5 is 12.
The value of the function at $x = 5$ is 15.

Now Answer the following: Is the function continuous at $x = 5$? Explain

- 4) The function is continuous at $x = 5$ and $f(5) = 9$

Now Answer the following: Is the function continuous at $x = 5$? Explain

- 5) The limit of the function at $x = 5$ exists and the function is undefined at $x = 5$

Now Answer the following: Is the function continuous at $x = 5$? Explain