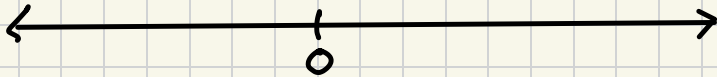


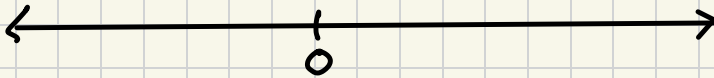
Ch. 30 - BOARD PROBLEMS

SOLVE AND PLOT ON NUMBER LINE.

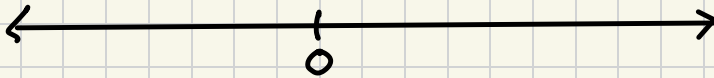
a) $|2x-7|+3 < 2$



b) $|3x+4| > 10$



c) $|6x+32| \leq 0$



2) $\sqrt{2x+10} = \sqrt{4x-3} + 1$

3) FIND THE X-INTERCEPTS:

$$y = -2(x-4)^2 - 12$$

Ch. 30 - Limits

LIMIT OF A FUNCTION

A) EXIST DON'T EXIST

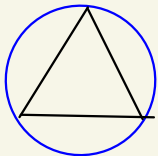


B)

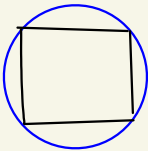
① $f(x) = \frac{1}{2^x}$
 $\lim_{x \rightarrow \infty} \frac{1}{2^x}$

as $x \rightarrow \infty$, $f(x)$ or $y \rightarrow$

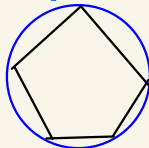
② $f(x) = x$
 $\lim_{x \rightarrow \infty} x$



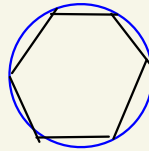
triangle



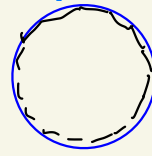
SQUARE



Pentagon



hexagon

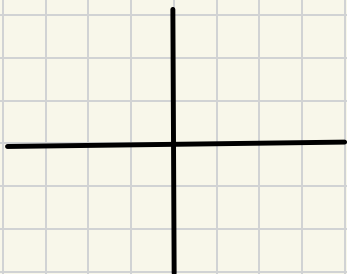


limit the inscribed figure approaches
SIDES $\rightarrow \infty$

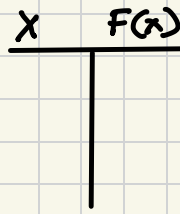
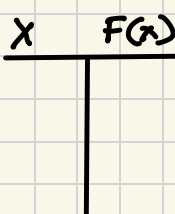
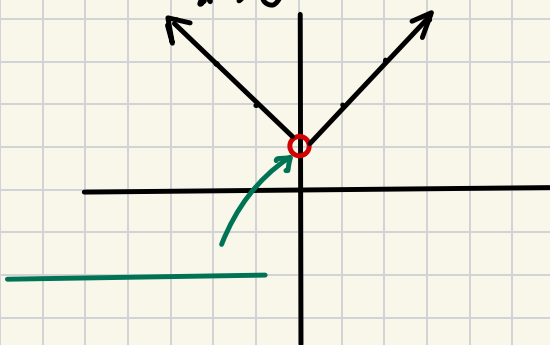
EX.4

$$f(x) = |x|$$

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

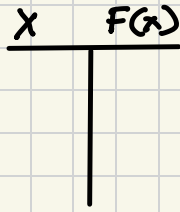
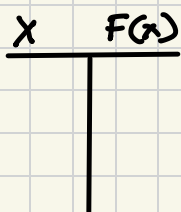
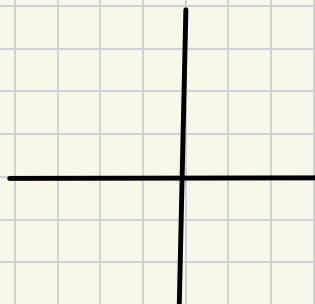


EX.5. $\lim_{x \rightarrow 0} (|x| + 1) =$



EX. 6

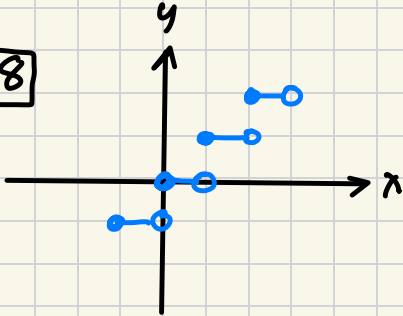
$$\lim_{x \rightarrow -2} x^2$$



EX. 7

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

EX. 8



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

from left

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

from right

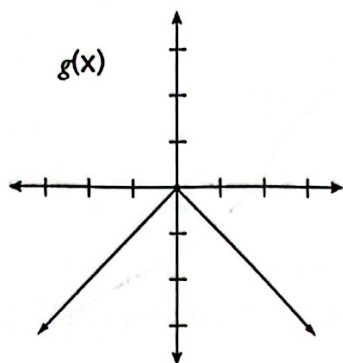
$$\lim_{x \rightarrow 2^+} f(x)$$

Ch. 30 Summary

- 1) Some limits exist, some don't
- 2) If the limit exists, it is a real and unique number.
- 3) Notation for Limits:
- 4) To evaluate the limit, first try substituting A into $F(x)$, hence $F(A)$
- 5) Try factoring, noting any places that can make the functions divided by zero.
- 6) Try Graphing the Function
- 7) Finally, the limit is y or the height of $F(x)$ when $x = a$

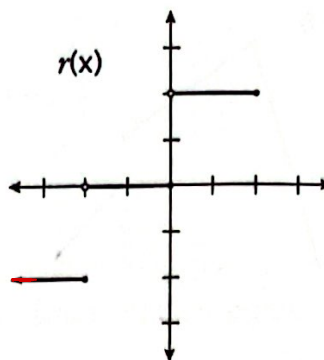
Evaluate the following limits from the given graphs.

1.



$$\lim_{x \rightarrow 0} g(x) = \underline{\hspace{2cm}}$$

2.



$$\lim_{x \rightarrow -2} r(x) = \underline{\hspace{2cm}}$$

$$\lim_{x \rightarrow -1} r(x) = \underline{\hspace{2cm}}$$

Evaluate the following limits by drawing a graph.

3. $\lim_{x \rightarrow 1} r(x) |x - 2|$

4. $\lim_{x \rightarrow \infty} \frac{1}{2x}$

Evaluate the following limits by factoring.

5. $\lim_{x \rightarrow 2} \frac{x^2 + 3x - 10}{x - 2}$

6. $\lim_{x \rightarrow -3} \frac{x^2 + x - 6}{x^2 + 2x - 3}$

LESSON 30A

Evaluate the following limits using any appropriate method.

7. $\lim_{x \rightarrow 1} 2x^2 - 6$

8. $\lim_{x \rightarrow \infty} x^2 + 2x$

9. $\lim_{x \rightarrow \pi/2} \frac{\cos x}{\sin^2 x}$

10. $\lim_{\theta \rightarrow 0^\circ} \frac{\cot^2 \theta - \csc^2 \theta}{\sec^2 \theta}$

Hint: Simplify and then evaluate.