

Limits Introduction Homework

1. The graph of $f(x)$ is shown in the figure below. Which of the following statements about $f(x)$ is true?

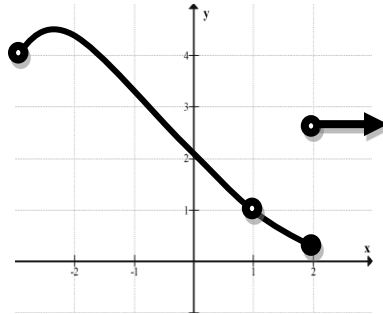
A) $\lim_{x \rightarrow 1} f(x) = DNE$

B) $\lim_{x \rightarrow 2} f(x) = 0.3$

C) $\lim_{x \rightarrow 2.01} f(x) < \lim_{x \rightarrow 2} f(x)$

D) $\lim_{x \rightarrow -1} f(x) \approx 3.3$

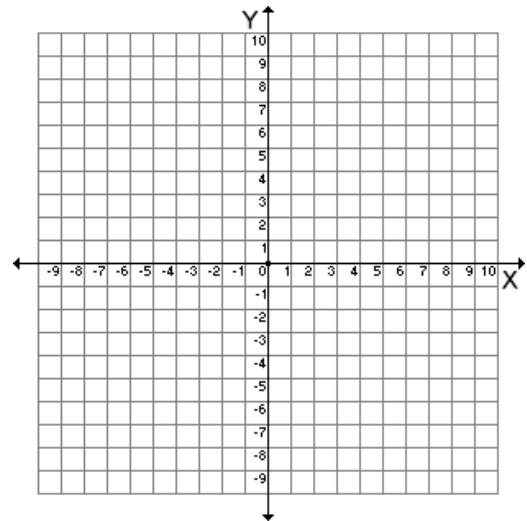
E) $\lim_{x \rightarrow -3} f(x) = 4$



2. Graph the function and find the limit (if it exists) as x approaches 2.

$$f(x) = \begin{cases} 2x+1, & x < 2 \\ x+3, & x \geq 2 \end{cases}$$

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



#3-8, Find the limit by direct substitution.

3. $\lim_{x \rightarrow 5} (10 - x^2) =$ _____

4. $\lim_{x \rightarrow -3} (2x^2 + 4x + 1) =$ _____

5. $\lim_{x \rightarrow \pi} \left(\sin \frac{x}{2} \right) =$ _____

6. $\lim_{x \rightarrow 3} e^x =$ _____

7. $\lim_{x \rightarrow \pi} \sec 2x =$ _____

8. $\lim_{x \rightarrow \pi} \tan\left(\frac{3x}{4}\right) =$ _____

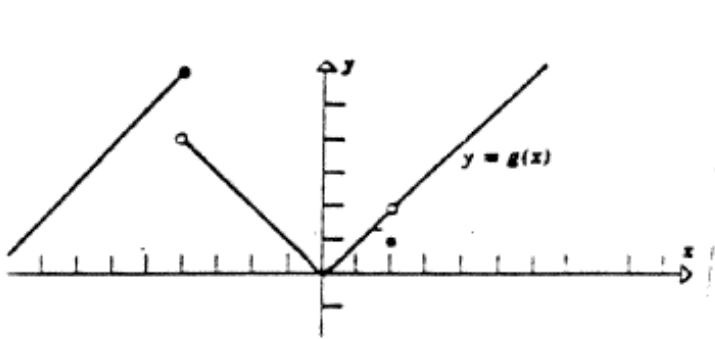
9. Find the limits using the piecewise function.

$\lim_{x \rightarrow -4^-} g(x) =$ _____

$\lim_{x \rightarrow -4^+} g(x) =$ _____

$\lim_{x \rightarrow 2} g(x) =$ _____

$g(2) =$ _____



10. Simplify. Answers should be in simplified radical form.

a) $\sqrt{\frac{18}{10}}$

b) $\frac{6}{\sqrt{5} + \sqrt{7}}$

c) $\frac{5}{2\sqrt{2}}$

d) $\frac{6}{2\sqrt{3}}$