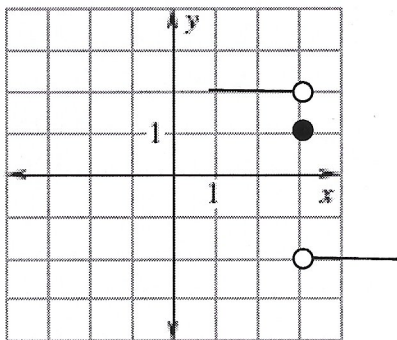


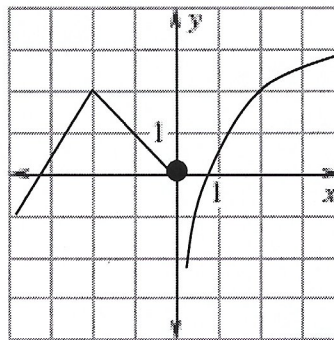
Use the graph to estimate the limits and function values, or explain why the limits do not exist or the function values are undefined.

1.



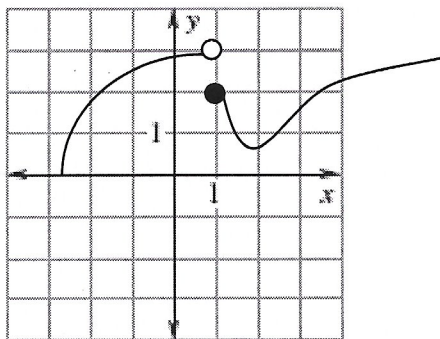
- $\lim_{x \rightarrow 3^-} =$ _____
- $\lim_{x \rightarrow 3^+} =$ _____
- $\lim_{x \rightarrow 3} =$ _____
- $f(3) =$ _____

2.



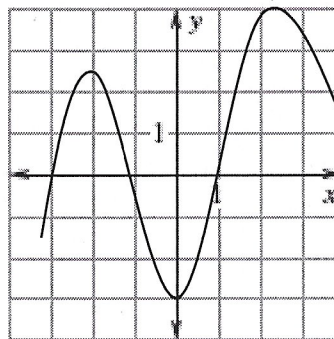
- $\lim_{x \rightarrow -2^-} =$ _____
- $\lim_{x \rightarrow -2^+} =$ _____
- $\lim_{x \rightarrow -2} =$ _____
- $f(-2) =$ _____

3.



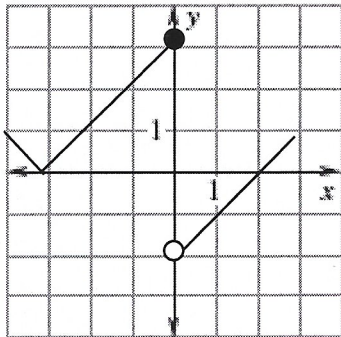
- $\lim_{x \rightarrow 1^-} =$ _____
- $\lim_{x \rightarrow 1^+} =$ _____
- $\lim_{x \rightarrow 1} =$ _____
- $f(1) =$ _____

4.



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

5.



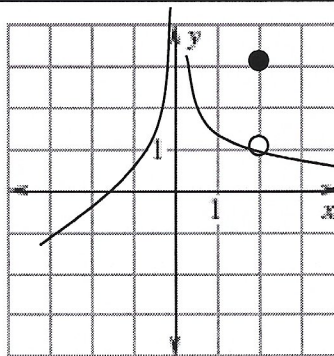
a. $\lim_{x \rightarrow 0^-} =$ _____

b. $\lim_{x \rightarrow 0^+} =$ _____

c. $\lim_{x \rightarrow 0} =$ _____

d. $f(0) =$ _____

6.



a. $\lim_{x \rightarrow 2^-} =$ _____

b. $\lim_{x \rightarrow 2^+} =$ _____

c. $\lim_{x \rightarrow 2} =$ _____

d. $f(2) =$ _____

Determine the limit.

7. $\lim_{x \rightarrow -\frac{1}{2}} 3x^2(2x - 1)$

8. $\lim_{x \rightarrow -4} (x + 3)^{1997}$

9. $\lim_{x \rightarrow -3} \frac{x^2 + 4x + 3}{x^2 - 3}$

10. $\lim_{x \rightarrow 0} e^x \cos x$

11. $\lim_{x \rightarrow -2} \sqrt{x - 2}$

12. $\lim_{x \rightarrow 0} \frac{1}{x^2}$

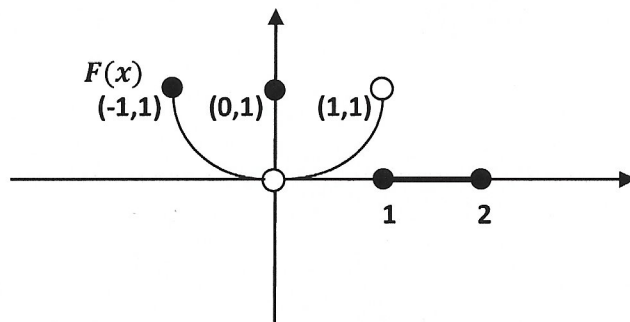
13. $\lim_{x \rightarrow 1} \frac{x - 1}{x^2 - 1}$

14. $\lim_{x \rightarrow 2} \frac{x^2 - 3x + 2}{x^2 - 4}$

15. $\lim_{x \rightarrow 0} \frac{(2 + x)^3 - 8}{x}$

16. $\lim_{x \rightarrow 0} \frac{\sin 2x}{x}$ *hint: graph this one!

17.



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

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

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

d. $\lim_{x \rightarrow 1^-} f(x) =$ _____

e. $\lim_{x \rightarrow 1^+} f(x) =$ _____

f. $\lim_{x \rightarrow 1} f(x) =$ _____

g. $\lim_{x \rightarrow 2^-} f(x) =$ _____

h. $\lim_{x \rightarrow 2^+} f(x) =$ _____

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

j. $f(0) =$ _____

k. On the interval $[-1,1]$, $f(x)$ is discontinuous at $x =$ _____