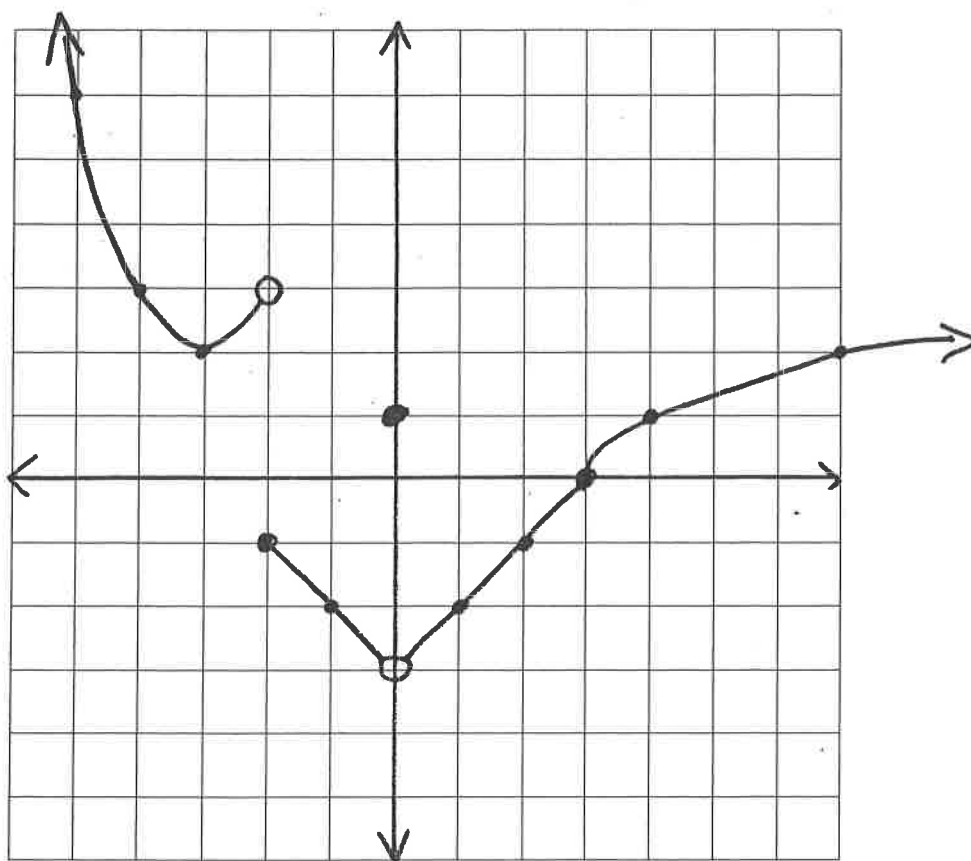


AP Calc AB
Limits



1) $f(-2) = -1$

2) $f(0) = 1$

3) $f(3) = 0$

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

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

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

7) $\lim_{x \rightarrow 0^+} f(x) = -3$

8) $\lim_{x \rightarrow 0^-} f(x) = -3$

9) $\lim_{x \rightarrow 0} f(x) = -3$

10) $\lim_{x \rightarrow 3^+} f(x) = 0$

11) $\lim_{x \rightarrow 3^-} f(x) = 0$

12) $\lim_{x \rightarrow 3} f(x) = 0$

Name _____

Find each limit. Calculators may not be used.

1. $\lim_{x \rightarrow -3} (2x+5)$
-1

2. $\lim_{x \rightarrow 5} \left(\frac{x-3}{x+5} \right)$
1/5

4. $\lim_{x \rightarrow 1} (\sqrt{x-5})$
one

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

Use the following functions for #'s 7-18:

$f(x) = x^2 - 7$

$g(x) = x - 5$

$h(x) = x^2 - 25$

7. $\lim_{x \rightarrow 1} f(x)$
9

8. $\lim_{x \rightarrow 3} h(x)$
-16

9. $\lim_{x \rightarrow 2} g(x)$
-3

10. $\lim_{x \rightarrow 5} (f \circ g)(x)$
-7

11. $\lim_{x \rightarrow 2} \frac{h(x)}{g(x)}$
3

12. $\lim_{x \rightarrow 6} (g \circ h)(x)$
6

13. $\lim_{x \rightarrow 1} f(x) + h(x)$
30

14. $3 \lim_{x \rightarrow 8} g(x)$
9

15. $\lim_{x \rightarrow 1} f(x) - h(x) + g(x)$
17

16. $\frac{\lim_{x \rightarrow 1} f(x)}{\lim_{x \rightarrow 2} (g \circ h)(x)}$
9/-26

17. $\lim_{h \rightarrow 0} \frac{f(a+h) - f(a)}{h}$
 $\frac{(a+h)^2 - 7 - (a^2 - 7)}{h} = \frac{2ah}{h} = 2a$

18. $\lim_{m \rightarrow 0} \frac{h(a+m) - h(a)}{m}$
 $\frac{(a+m)^2 - 25 - (a^2 - 25)}{m} = \frac{2am}{m} = 2a$

19. $\lim_{\theta \rightarrow \frac{\pi}{4}} (\sec \theta)$
dne

20. $\lim_{\theta \rightarrow \frac{\pi}{4}} (\sin \theta)$
 $\frac{\sqrt{2}}{2}$

21. $\lim_{\theta \rightarrow \frac{\pi}{3}} (\cot \theta)$
3

22. $\lim_{\theta \rightarrow \frac{\pi}{6}} (\cos \theta)$
 $-\frac{\sqrt{3}}{2}$

23. $\lim_{\theta \rightarrow \frac{\pi}{2}} (\csc \theta)$
-1

24. $\lim_{\theta \rightarrow \pi} (\tan \theta)$
0

25. $f(x) = \begin{cases} x^2 - 2 & x < 1 \\ x + 1 & x \geq 1; x \neq 3 \\ \sqrt{x+22} & x = 3 \end{cases}$

a) sketch a graph of f(x) see graph

b) $f(1) = 2$ c) $f(2) = 3$ d) $f(3) = 5$ e) $f(-1) = -1$

f) $\lim_{x \rightarrow 1} f(x) = -1$ g) $\lim_{x \rightarrow 1} f(x) = 2$ h) $\lim_{x \rightarrow 1} f(x) = \text{dne}$ i) $\lim_{x \rightarrow 2} f(x) = 3$

j) $\lim_{x \rightarrow 3} f(x) = 4$ k) $\lim_{x \rightarrow 3} f(x) = 4$ l) $\lim_{x \rightarrow 3} f(x) = 2$ m) $\lim_{x \rightarrow 0^+} f(x) = -2$

26. $f(x) = \begin{cases} \sin x & x \leq 0 \\ |x| + 2 & 0 < x \leq 3 \\ -x^2 + 10 & x > 3 \end{cases}$

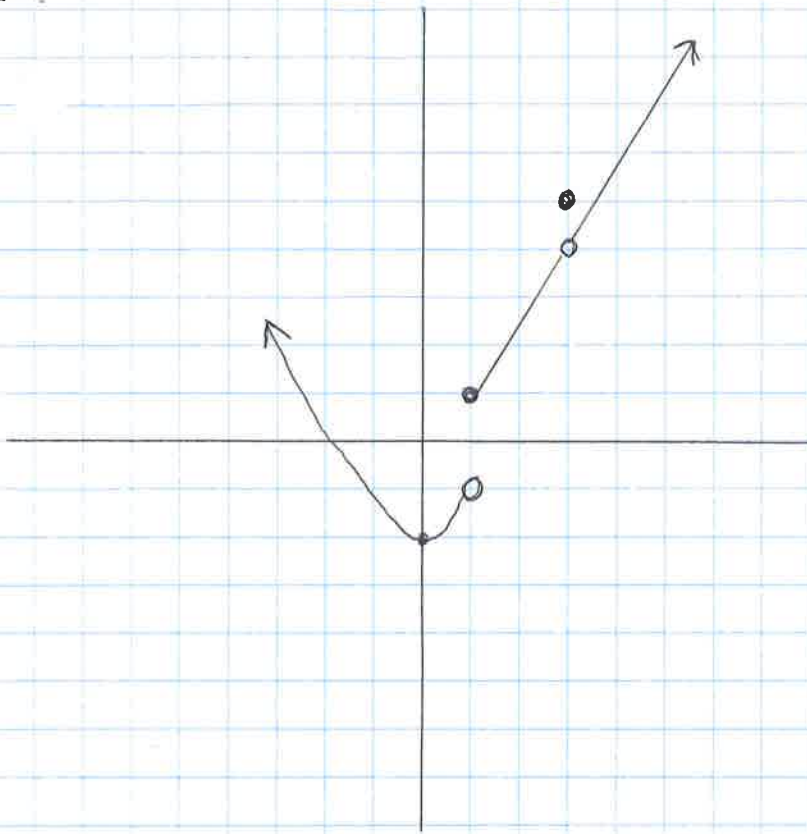
a) sketch a graph of f(x) see graph

b) $f(0) = 0$ c) $f(3) = 5$ d) $f(2) = 4$ e) $f(7) = -39$

f) $\lim_{x \rightarrow 0^+} f(x) = 2$ g) $\lim_{x \rightarrow 0^+} f(x) = 0$ h) $\lim_{x \rightarrow 3} f(x) = 1$ i) $\lim_{x \rightarrow 3} f(x) = 5$

j) $\lim_{x \rightarrow 3} f(x) = -15$ k) $\lim_{x \rightarrow 3} f(x) = 3$ l) $\lim_{x \rightarrow 10^+} f(x) = \frac{-\sqrt{2}}{2}$ m) $\lim_{x \rightarrow 0} f(x) = -\infty$

25.



26.

