

AP Calculus: Graphical Introduction to Limits

Name: _____ Date: _____ Period: _____

Graph the following piecewise function, $g(x)$. Use it to answer the limit questions.

$$g(x) = \begin{cases} x+7, & x < -5 \\ 4, & -5 < x < -2 \\ -x^2+8, & -2 < x \leq 3 \\ \frac{1}{3}x-2, & 3 < x \leq 6 \\ -2x+20, & 6 < x < 8 \\ 7, & x = 8 \\ 2, & 8 < x \leq 11 \\ \frac{1}{(x-11)^2}, & x > 11 \end{cases}$$

1.) $\lim_{x \rightarrow -5^+} g(x) = \underline{\hspace{2cm}}$

2.) $\lim_{x \rightarrow -5^-} g(x) = \underline{\hspace{2cm}}$

3.) $g(-5) = \underline{\hspace{2cm}}$

4.) $\lim_{x \rightarrow -2^+} g(x) = \underline{\hspace{2cm}}$

5.) $\lim_{x \rightarrow -2^-} g(x) = \underline{\hspace{2cm}}$

6.) $g(-2) = \underline{\hspace{2cm}}$

7.) $\lim_{x \rightarrow 3^+} g(x) = \underline{\hspace{2cm}}$

8.) $\lim_{x \rightarrow 3^-} g(x) = \underline{\hspace{2cm}}$

9.) $g(3) = \underline{\hspace{2cm}}$

10.) $\lim_{x \rightarrow 6^-} g(x) = \underline{\hspace{2cm}}$

11.) $\lim_{x \rightarrow 6^+} g(x) = \underline{\hspace{2cm}}$

12.) $g(6) = \underline{\hspace{2cm}}$

13.) $\lim_{x \rightarrow 8^-} g(x) = \underline{\hspace{2cm}}$

14.) $\lim_{x \rightarrow 8^+} g(x) = \underline{\hspace{2cm}}$

15.) $g(8) = \underline{\hspace{2cm}}$

16.) $\lim_{x \rightarrow 11^+} g(x) = \underline{\hspace{2cm}}$

17.) $\lim_{x \rightarrow 11^-} g(x) = \underline{\hspace{2cm}}$

18.) $g(11) = \underline{\hspace{2cm}}$

Now try these:

19.) $\lim_{x \rightarrow -5} g(x) = \underline{\hspace{2cm}}$

20.) $\lim_{x \rightarrow -2} g(x) = \underline{\hspace{2cm}}$

21.) $\lim_{x \rightarrow 3} g(x) = \underline{\hspace{2cm}}$

22.) $\lim_{x \rightarrow 6} g(x) = \underline{\hspace{2cm}}$

23.) $\lim_{x \rightarrow 8} g(x) = \underline{\hspace{2cm}}$

24.) $\lim_{x \rightarrow 11} g(x) = \underline{\hspace{2cm}}$