

AP Calculus AB

Name: _____

Unit 1 – Day 3 Assignment

Analytical Approach to Finding Limits (continued)

Find the limit of each of the following exponential functions. Sketch a graph of each function to aid in your determination of the limit, if necessary..

1. $\lim_{x \rightarrow \infty} -(0.5)^{-x-2} + 3$

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

3. $\lim_{x \rightarrow -\infty} -\left(\frac{1}{4}\right)^{-x-2} + 3$

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

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

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

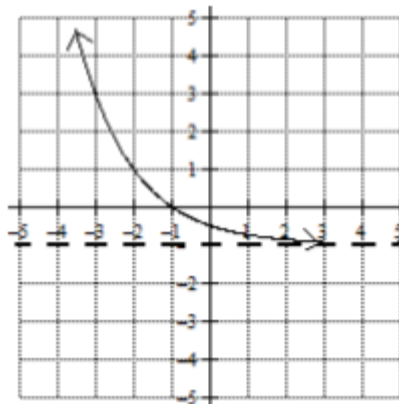
7. Using the graph of $g(x)$ pictured to the right, find each of the following limits.

a. $\lim_{x \rightarrow \infty} g(x) =$ _____

b. $\lim_{x \rightarrow -\infty} g(x) =$ _____

c. $\lim_{x \rightarrow -1} g(x) =$ _____

d. $\lim_{x \rightarrow -3} g(x) =$ _____



Find the value of each limit. For a limit that does not exist, state why.

<p>8.</p> $\lim_{x \rightarrow 0} \frac{x + \sin x}{x}$	<p>9.</p> $\lim_{x \rightarrow 3} \begin{cases} 2x^2 - 3x, & x < 3 \\ 8 - \cos\left(\frac{\pi x}{3}\right), & x > 3 \end{cases}$	<p>10.</p> $\lim_{\theta \rightarrow \frac{\pi}{2}} \frac{\cos^2 \theta}{1 - \sin \theta}$
<p>11.</p> $\lim_{\theta \rightarrow 0} \frac{2 \sin 3\theta}{\theta}$	<p>12.</p> $\lim_{x \rightarrow 0} \frac{\sin x}{2x^2 - x}$	<p>13.</p> $\lim_{x \rightarrow 0} \frac{5x + \sin 3x}{x}$
<p>14.</p> $\lim_{x \rightarrow 0} \frac{2 \sin 4x}{3x}$	<p>15.</p> $\lim_{x \rightarrow 0} \frac{\sin 2x}{6x}$	<p>16.</p> $\lim_{\theta \rightarrow 0} \frac{\cos \theta \tan \theta}{3\theta}$
<p>17.</p> $\lim_{\theta \rightarrow 0} \frac{3 - 3 \cos \theta}{\theta}$	<p>18.</p> $\lim_{\theta \rightarrow \frac{\pi}{2}} \frac{\cos \theta}{\cot \theta}$	<p>19.</p> $\lim_{\theta \rightarrow 0} \frac{1 - \tan \theta}{\sin \theta - \cos \theta}$
<p>20.</p> $\lim_{c \rightarrow 3} \frac{c^3 - 27}{c - 3}$	<p>21.</p> $\lim_{x \rightarrow -1} \frac{(x+3)^3 - 8}{x+1}$	