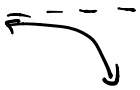
Homework 1.4

Find the limit of each of the following exponential functions. Without using a calculator, sketch a general graph of each function to aid in your determination of the limit, if necessary.

1. $\lim_{x\to\infty}[-(0.5)^{-x-2}+3]$ $= -\infty$ $\lim_{x\to\infty}\left[-(2)^{x+2}+3\right]$ 	2. $\lim_{x\to\infty}(2^{-x-2}+3)$ $= 3$ 	3. $\lim_{x\to-\infty}\left[-\left(\frac{1}{4}\right)^{-x-2}+3\right]$ $= 3$ $\lim_{x\to-\infty}\left[-(4)^{x+2}+3\right]$ 
4. $\lim_{x\to-2}[-(3)^{-x-2}+3]$ $= -(3)^{-(-2)-2}+3$ $= -(3)^0+3$ $= -1+3$ $= 2$	5. $\lim_{x\to-2}\left[\left(\frac{1}{2}\right)^{x+2}-1\right]$ $= \left(\frac{1}{2}\right)^{-2+2}-1$ $= \left(\frac{1}{2}\right)^0-1$ $= 1-1$ $= 0$	6. $\lim_{x\to-1}[2^{-x-2}+2]$ $= 2^{-(-1)-2}+2$ $= 2^{-1}+2$ $= \frac{1}{2}+\frac{4}{2}$ $= 5/2$

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

a. $\lim_{x\to\infty} g(x) =$ -1

b. $\lim_{x\to-\infty} g(x) =$ ∞

c. $\lim_{x\to-1} g(x) =$ 0

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