## Wacky Limits

Name: $\qquad$
These limits are wacky. Help me understand the key. All I have is the answers and not the reasons why the answers are what they are. Do this by providing the correct mathematical reasons/work explaining how one gets the correct answer.



1. $\lim _{x \rightarrow 0}(f(x)+g(x))=0$
2. $\lim _{x \rightarrow 2^{-}} \frac{g(x)}{f(x)}=\lim _{x \rightarrow 2^{+}} \frac{g(x)}{f(x)}=\lim _{x \rightarrow 2} \frac{g(x)}{f(x)}=0$
3. $\lim _{x \rightarrow-1}(f(x)+g(x))=0$
4. $\lim _{x \rightarrow-1} \frac{f(x)}{g(x)}=-1$
5. $\lim _{x \rightarrow 2}(f(x) g(x))=0$
6. $\lim _{x \rightarrow 3^{-}} f(g(x))=2$


Graph of $f$

Graph of $g$

7. $\lim _{x \rightarrow 1^{+}} f(g(x))=2$
8. $\lim _{x \rightarrow-2^{-}} g(f(x))=-1$ (and NOT -2$)$
9. $\lim _{x \rightarrow 1^{-}} f(g(x))=2$ (and NOT 1$)$
10. $\lim _{x \rightarrow 2^{-}} \frac{f(x)}{g(x)}=-\infty$
11. $\lim _{x \rightarrow 2^{+}} \frac{f(x)}{g(x)}=-\infty$
12. $\lim _{x \rightarrow 2} \frac{f(x)}{g(x)}=-\infty$

