

1. Evaluate the limit (show work for (d), (e), and (f)):

(a) $\lim_{x \rightarrow 5} -1$

(d) $\lim_{x \rightarrow -2} \frac{x^2 + 3x + 2}{x + 2}$

(b) $\lim_{x \rightarrow 5} x$

(e) $\lim_{t \rightarrow 0} \frac{4^{2t} - 1}{4^t - 1}$

(c) $\lim_{x \rightarrow 0} \frac{\sin x}{x}$

(f) $\lim_{x \rightarrow \infty} \frac{5x^2 - 3x}{1 + 7x^2}$

2. If for $f(x)$ we know $\lim_{x \rightarrow \infty} f(x) = 2$, what kind of asymptote do we have (circle: **horizontal** or **vertical**) and what is the equation for that asymptote's line?

3. True or false?

(a) ____ If $f(x)$ has a horizontal asymptote at $y = 3$, then there is **no** value c for which $f(c) = 3$.

(b) ____ If for some continuous function $f(x)$ we have $f(2) = 4$ and $f(4) = 8$, then there must be some value c for which $f(c) = 1$.

4. In the graph below, we can see that $f(x) \leq g(x) \leq h(x)$. If we know that $\lim_{x \rightarrow c} f(x) = \lim_{x \rightarrow c} h(x) = L$, what can we conclude from the Squeeze Theorem about $g(x)$?

