

Quiz 2-3 Key

Monday, December 01, 2008
9:30 AM

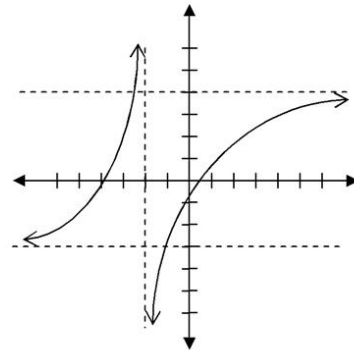
Precalculus BC Quiz #2-3 Hungerford 4.5 & Limits

Name: Key Per: _____
November 25, 2008

1. The function f is graphed at right. Based on the graph, write four correct limit statements. Every tick mark is 1 unit.

$\lim_{x \rightarrow +\infty} f(x) = 4$	$\lim_{x \rightarrow -2^+} f(x) = -\infty$
$\lim_{x \rightarrow -\infty} f(x) = -3$	$\lim_{x \rightarrow -2^-} f(x) = +\infty$

HAs
UAs



2. Compute each limit, and name the corresponding feature of the graph. Give some algebraic (big/little) reasoning.

a. $\lim_{x \rightarrow \infty} \frac{4x^2 + 6x + 3}{7x^4 - 36x^2 + 2}$

$\lim_{x \rightarrow \infty} \frac{4x^2 + 6x + 3}{7x^4 - 36x^2 + 2} = \lim_{x \rightarrow \infty} \frac{\frac{4}{x^2} + \frac{6}{x} + \frac{3}{x^2}}{7 - \frac{36}{x^2} + \frac{2}{x^4}}$

$= \lim_{x \rightarrow \infty} \frac{4}{7x^2} = 0$
HA at $y = 0$

b. $\lim_{x \rightarrow \infty} \frac{4}{8 - 2e^{-x}}$

As $x \rightarrow +\infty$, $2e^{-x}$ gets small,
 so $\frac{4}{8 - 2e^{-x}} \rightarrow \frac{4}{8} = \frac{1}{2}$

\therefore HA at $y = \frac{1}{2}$

3. Find the nonvertical asymptotes of each function. Give an algebraic justification (but you may do the algebra on your calculator).

a. $f(x) = \frac{3x^2 + 5x}{2x^2 + 30x + 4}$

$f(x) \rightarrow \frac{3x^2}{2x^2} = \frac{3}{2}$

So $y = \frac{3}{2}$ is HA

b. $g(x) = \frac{4x^2 + 6x + 3}{2x - 1}$

$g(x) = 2x + 4 + \frac{7}{2x - 1}$

So for large x , $g(x) \approx 2x + 4$

NVA at $y = 2x + 4$