DATE: _____

Limits at Infinity

2003 AP Multiple-Choice Non-Calculator

6. $\lim_{x\to\infty} \frac{x^3-2x^2+3x-4}{4x^3-3x^2+2x-1} =$

(A) 4 **(B)** 1 **(C)** ¼ **(D)** 0 **(E)** –1

2008 AP Multiple-Choice Non-Calculator

1. $\lim_{x\to\infty} \frac{(2x-1)(3-x)}{(x-1)(x+3)}$ is

(A) -3 **(B)** -2 **(C)** 2 **(D)** 3 **(E)** nonexistent

Limits at Infinity – end behavior of a graph/function

– Horizontal Asymptote at $y = L$ if $\lim_{x\to\infty} f(x) = L$ or $\lim_{x\to-\infty} f(x) = L$.

If degree of numerator degree of denominator, then $\lim_{x\to\pm\infty} f(x) =$

(and, Horizontal Asymptote at $y =$)

Example: Evaluate the limit, if the limit exists.

$\lim_{x\to\infty} \frac{5x^2-3x+1}{7x^2-4}$

If degree of numerator degree of denominator, then $\lim_{x\to\pm\infty} f(x) =$

(and, Horizontal Asymptote at $y =$)

Example: Evaluate the limit, if the limit exists.

$\lim_{x\to\infty} \frac{7x+1}{5x^2-4}$

If degree of numerator degree of denominator, then $\lim_{x\to\pm\infty} f(x) =$

(and, NO Horizontal Asymptote)

Example: Evaluate the limit, if the limit exists.

$\lim_{x\to\infty} \frac{5x^2-3x+1}{7x-4}$