Limits — As x → ∞

Name: _____ Date: _____

Find each limit. Divide every term by the highest power of x on the bottom.

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

$\lim_{x\to\infty} \frac{-1 + 2/x - 1/x^2}{3 + 1/x^2}$

$= \frac{-1 + 0 + 0}{3 + 0}$

$= \frac{-1}{3}$

2. $\lim_{x\to\infty} \frac{3x^2 - x - 3}{x^2 + 3}$

3. $\lim_{x\to\infty} \frac{2x^2 - 2x + 2}{3x^2 - 2}$

4. $\lim_{x\to\infty} \frac{x + 1}{x - 2}$

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

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

Limits · As x → ∞ — Answer key

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

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

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

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

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

6. $\lim_{x\to\infty} \frac{2x - 1}{2x^2 + 3} = 0$