# Limits at Infinity Worksheet - Answer Key

Find each limit, if it exists.

1. $\lim_{x\to\infty} \frac{(2x)^2}{(2)^2 x}$

   $\infty$

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

   0

3. $\lim_{x\to\infty} 1000\sin(1000x)$

   The limit does not exist.

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

   $\frac{2}{3}$

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

   0

6. $\lim_{x\to\infty} \frac{5^x}{\ln(x^3+2x+1)}$

   $\infty$

7. $\lim_{x\to\infty} \frac{x^3-2x^2+1}{5x-9x^4+x^2}$

   $\infty$

8. $f(x) = \frac{6x+5+\frac{2}{x}}{x}$

   6

9. $\lim_{x\to\infty} \frac{2(\ln x)^2+5x-7}{9x^2+x-11}$

   0

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

    $\lim_{x\to\infty} \frac{e^{\frac{1}{x}}(x-2)(1-\frac{1}{x})}{x-2} = 1$

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