

# 1.7B Rational Functions and End Behavior

AP Precalculus

Name: \_\_\_\_\_

**CA #1**

**Find the end behavior of the following rational functions.**

1.  $f(x) = \frac{x+3}{x^2-16}$

2.  $g(x) = \frac{5x^2+3x}{2x^2+10x-28}$

3.  $h(t) = \frac{t^2-3t+1}{3t+2}$

**Find the horizontal asymptote of the following rational functions if one exists.**

4.  $f(x) = \frac{(x+2)(x+6)}{2x^2+3x-28}$

5.  $r(x) = \frac{x+3}{3x^3+5x-2}$

6.  $g(n) = \frac{n^2-1}{7+2n}$

**Evaluate the following limits.**

7.  $\lim_{x \rightarrow \infty} \frac{4x^2+2}{x^2-25} =$

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

9.  $\lim_{n \rightarrow \infty} \frac{n^4-3n^3}{3n^5+n^2-2} =$

## Answers to 1.7B CA #1

|  |  |   |
|--|--|---|
| 1. $\lim_{x \rightarrow -\infty} f(x) = 0$<br>$\lim_{x \rightarrow \infty} f(x) = 0$ | 2. $\lim_{x \rightarrow -\infty} g(x) = \frac{5}{2}$<br>$\lim_{x \rightarrow \infty} g(x) = \frac{5}{2}$ | 3. $\lim_{t \rightarrow -\infty} h(t) = -\infty$<br>$\lim_{t \rightarrow \infty} h(t) = \infty$ |
| 4. $y = \frac{1}{2}$   | 5. $y = 0$   | 6. No horizontal asymptote  |
| 7. 4   | 8. $-\infty$ (does not exist)  | 9. 0  |