Infinite Limit Proofs

Directions: Prove each limit using a delta-M, N-epsilon, or N-M proof.

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

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

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

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

5. $\lim_{x\to 1^-} \frac{5x^2}{6x-6} = -\infty$

6. $\lim_{x\to 5^+} \frac{x^3}{5-x} = -\infty$

7. $\lim_{x\to \infty} \frac{1}{x+3} = 0$

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

9. $\lim_{x\to \infty} \frac{3x}{x+5} = 3$

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

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

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

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

14. $\lim_{x\to \infty} \frac{2x^2+5}{4-x} = -\infty$