

SECTION 2-6 (DAY 1)

Evaluate the limits below. You may use graphs or numerical calculation to confirm your answer, but your *formal* answer must be **algebraic**.

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

2. $\lim_{x \rightarrow \infty} \frac{5x^{5/2} - 8x^2 + 1}{2x^2 + 7}$

3. $\lim_{x \rightarrow \infty} \frac{2e^x}{8 - \sqrt{5}e^x}$

4. $\lim_{x \rightarrow -\infty} \frac{2e^x}{8 - \sqrt{5}e^x}$

Hint: $x^3 = \sqrt{x^6}$ provided $x > 0$.

5. $\lim_{x \rightarrow \infty} \frac{\sqrt{3x^6 - x}}{x^3 + 1}$

6. $\lim_{x \rightarrow -\infty} \frac{\sqrt{3x^6 - x}}{x^3 + 1}$

7. $\lim_{x \rightarrow -\infty} e^{\arctan x}$

8. $\lim_{x \rightarrow \infty} [\ln(2 + 3x) - \ln(1 + x)]$

9. $\lim_{x \rightarrow \infty} (\sqrt{x^2 + x} - x)$

10. $\lim_{x \rightarrow -\infty} \sqrt[3]{x} - x^3$

11. $\lim_{x \rightarrow \infty} e^{-2x} + \cos x$

12. $\lim_{x \rightarrow \infty} e^{-2x} \cos x$ (Hint: Use the Squeeze Theorem.)

13. Find all vertical and horizontal asymptotes in the graph of the function $g(s) = \frac{\sqrt{3s^2 + 1}}{2s + 1}$.