SECTION 2-2: LIMIT LAWS

Read Section 2.3. Work the embedded problems.

The goal for every problem below is to (a) correctly evaluate the limit, (b) write the mathematics correctly, and (c) articulate *why* you can use the technique you used in part (a).

1. $\lim_{x \to \sqrt{2}} 5x - \sqrt{8x^2 - 1}$

2. $\lim_{t \to 0} \dfrac{e^{2t} - 1}{1 + \sin(\pi t)}$

3. $\lim_{x \to -1} \dfrac{x^2 + 8x + 7}{2x^2 + 3x + 1}$

4. $\lim_{x \to 5^-} \dfrac{x+1}{5x - x^2}$

5. $\lim_{x \to -10} \dfrac{2x + g(x)}{\pi f(x)}$ assuming that $\lim_{x \to -10} g(x) = \dfrac{1}{2}$ and $\lim_{x \to -10} f(x) = 1$

6. The last two problems reference the function $f(x) = \begin{cases} \frac{1}{2x} & \text{if } 0 < x \leq 2 \\ 0 & \text{if } 2 < x \end{cases}$

   (a) $\lim_{x \to 2} f(x)$

   (b) $\lim_{x \to 2^+} e^{f(x)}$