Practice – 1

Once you feel confident with limit properties, complete problems 1 to 4. Check your answers by going to the Solutions tab in Moodle.

Instructions: Answer each of the following practice questions on a separate piece of paper. Step by step solutions are provided under the Solutions tab. You will learn the material more thoroughly if you complete the questions before checking the answers.

1. Given $\lim_{x \to a} f(x) = 8$, $\lim_{x \to a} g(x) = 2$, and $\lim_{x \to \infty} h(x) = -3$, evaluate each of the following limits.

   a. $\lim_{x \to a} \left(f(x) + g(x)h(x) \right)$

   b. $\lim_{x \to a} \left(\sqrt{\frac{f(x)}{g(x)}} + 1 \right)$

2. If $\lim_{x \to a} f(x) = 2$, $\lim_{x \to a} g(x) = 1$, and $\lim_{x \to a} h(x) = 3$, evaluate $\lim_{x \to a} \left[\left(f(x) + \sqrt{g(x)} \right) (h(x))^2 \right]$.

3. Verify $\lim_{x \to -2} \left(\frac{x+1}{x-2} + \frac{x^2-4}{x+2} \right) = \lim_{x \to -2} \frac{x+1}{x-2} + \lim_{x \to -2} \frac{x^2-4}{x+2}$.

4. Verify $\lim_{x \to 4} \sqrt{x^2 - 16} = \sqrt{\lim_{x \to 4} (x^2 - 16)}$.