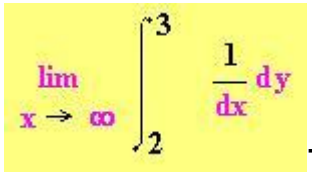

THE DEFINITION OF THE LIMIT

Prepared by Ingrid Stewart, Ph.D., College of Southern Nevada
Please Send Questions and Comments to ingrid.stewart@csn.edu. Thank you!

Problem 1:

Prove that the statement $\lim_{x \to 1} (-4x) = -4$ is true by using $\varepsilon = 1$ and finding an appropriate $\delta > 0$.

Problem 2:

Prove that the statement $\lim_{x \to 6} (9 - \frac{1}{6}x) = 8$ is true by using any $\varepsilon > 0$ and finding the appropriate $\delta > 0$.

Problem 3:

Prove that the statement $\lim_{x \to 5} \sqrt{x - 1} = 2$ is true by using $\varepsilon = 1$ and finding the appropriate $\delta > 0$.

Problem 4:

Prove that the statement $\lim_{x \to 2} (x^2) = 4$ is true by using $\varepsilon = 1$ and finding the appropriate $\delta > 0$.

Problem 5:

Prove that the statement $\lim_{x \to 1/2} \left(\frac{1}{x}\right) = 2$ is true by using $\varepsilon = 0.01$ and finding the appropriate $\delta > 0$.

Problem 6:

Prove that the statement $\lim_{x \to 3} (4x - 5) = 10$ is false by using $\varepsilon = 1$.

Problem 7:

Show that the statement $\lim_{x \to c} x = c$ is true for any $\varepsilon > 0$.

Problem 8:

Show that the statement $\lim_{x \to c} b = b$, where b is any real number, is true for any $\varepsilon > 0$.

You can find detailed solutions below the link for this problem set !!!