[08-02-13-T12]

The Abyss

Your calculus assignment is to claw your way out of the abyss.

You will do this by. . .

[1] Prove that $|A| < B \Longleftrightarrow -B < A < B$. Pkease give an algebraic proof rather than a direct appeal to the definition of $|A|$; that is use the theorem

$$|x| = \begin{cases} x, & x \geq 0 \\ -x, & x < 0 \end{cases}$$

[2] Prove that $|A - B| = |B - A|$

[3] Use the results of [1] and [2] to prove that

$$|x + 1| < 1 \Longrightarrow |x - 3| < 3$$

[4] Use the above results in continuing your preliminary analysis for question [2.5] # 17 eventually reaching that conclusion that you will choose $\delta = \min\{1, \frac{\epsilon}{3}\}$ in your proof.

[5] Finally, write the proof that $\lim_{x \longrightarrow -1} (x^2 - 2x - 1) = 2$.