Section 2.4, Items 6, 7

6) The left-hand question mark is the positive solution of \( x^2 = \frac{1}{2} \), that is, \( x = \frac{1}{\sqrt{2}} \), and the right-hand question mark is the positive solution of \( x^2 = \frac{3}{2} \), that is, \( x = \frac{\sqrt{3}}{\sqrt{2}} \). On the left side, we need \( |x - 1| < \frac{1}{\sqrt{2}} - 1 \approx 0.293 \). On the right side, we need

\[
|x - 1| < \frac{\sqrt{3}}{\sqrt{2}} - 1 \approx 0.224 \text{ (rounding down to be safe).}
\]

The more restrictive of these two conditions must apply, so we choose \( \delta = 0.224 \) (or any smaller positive number).

7) \( \sqrt{4x + 1} - 3 < 0.5 \iff 2.5 < \sqrt{4x + 1} < 3.5 \). On the calculator, plot the three parts of this inequality of the points of intersection using the cursor. It appears that the inequality holds for \( 1.32 \leq x \leq 2.81 \). Since \( |2 - 1.32| = 0.68 \) and \( |2 - 2.81| = 0.81 \), we choose \( 0 < \delta \leq \min \{0.68, 0.81\} = 0.68 \).

![Calculator Screen](image-url)