1. $\lim_{x \to 3} 2x+1 = 7$

$E = \epsilon$

$7 - E < 2x + 1 < 7 + E$

$-1 \quad -1 \quad -1$

$\frac{6-E}{2} < \frac{2x}{2} < \frac{6+E}{2}$

$=$

$\frac{6}{2} - \frac{E}{2} < x < \frac{6}{2} + \frac{E}{2}$

$=$

$3 - \frac{E}{2} < x < 3 + \frac{E}{2}$

$E = 1$

$3 - \frac{1}{2} < x < 3 + \frac{1}{2}$

$=$

$2.5 < x < 3.5$

If x is within 0.5 units of 3

$E = 0.6$

$3 - \frac{0.6}{2} < x < 3 + \frac{0.6}{2}$

$=$

$2.7 < x < 3.3$

If x is within 0.3 of units of 3

$E = 0.04$

$3 - \frac{0.04}{2} < x < 3 + \frac{0.04}{2}$

$=$

$2.98 < x < 3.02$

If x is within 0.02 units of 3

$\lim_{x \to 3} 2x - 1 = 5$

$5 - 1 = 4$ $\qquad$ $5 + 1 = 6$

$[4, 6]$

$4 < 2x - 1 < 6$

$+1 \qquad +1 \qquad +1$

$\frac{5}{2} < \frac{2x}{2} < \frac{7}{2}$

$2.5 < x < 3.5$

$5 - E < 2x - 1 < 5 + E$

$+1 \qquad +1 \qquad +1$

$\frac{6 - E}{2} < \frac{2x}{2} < \frac{6 + E}{2}$

$\frac{6}{2} - \frac{E}{2}$ $\qquad$ $\frac{6}{2} + \frac{E}{2}$

$3 - \frac{E}{2}$ $\qquad$ $3 + \frac{E}{2}$

$\frac{3 - E}{2}$ $\qquad$ $\frac{3 + E}{2}$

$E = \varepsilon$ $\qquad 3 - \frac{\varepsilon}{2} < x < 3 + \frac{\varepsilon}{2}$

$$\frac{\left(3 + \frac{\varepsilon}{2}\right) - \left(3 - \frac{\varepsilon}{2}\right)}{2}$$

$$3 + \frac{\varepsilon}{2} - 3 + \frac{\varepsilon}{2}$$

$$3 - 3 + \frac{\varepsilon}{2} + \frac{\varepsilon}{2}$$

$$\frac{\varepsilon}{2} + \frac{\varepsilon}{2}$$

$$\frac{2\varepsilon}{2}$$

$$2 \div 2$$

$$\frac{2\varepsilon}{2} \cdot \frac{1}{2}$$

$$\frac{\varepsilon}{2}$$

If x is within $\varepsilon/2$ units of 3

7.

$f(x) = x + 1$

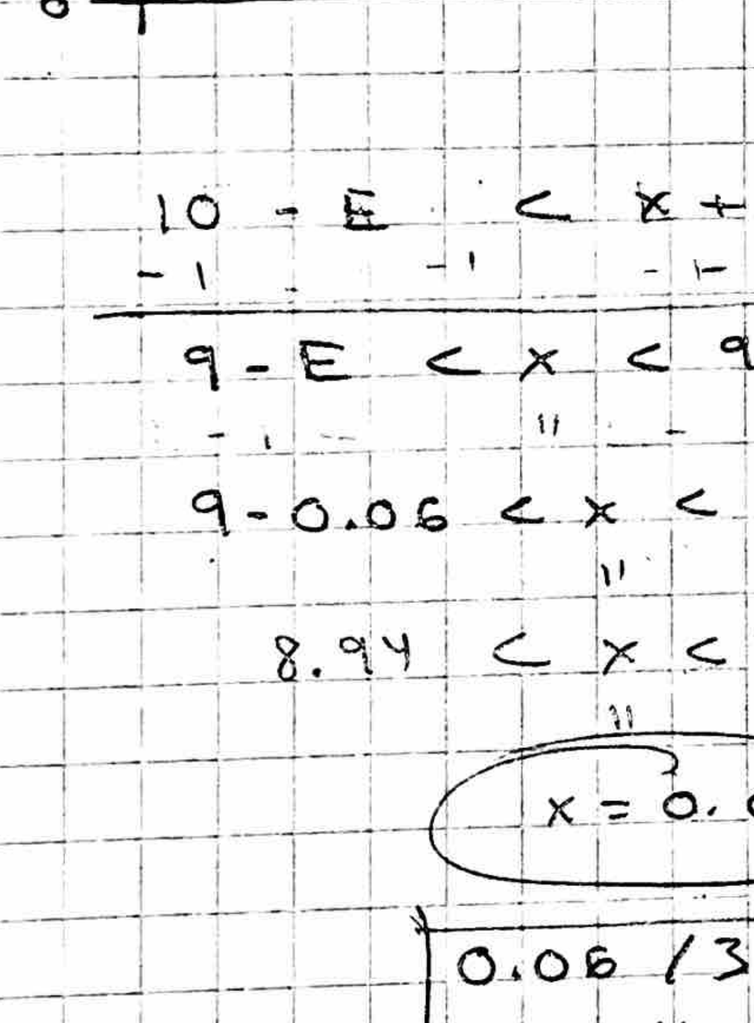
$\lim_{x \to ?} x + 1 = 10$

$x \to 0.$

within 0.06

$10 + 0.06$ " $10 - 0.06$

10.06 9.94



$10 - E < x + 1 < 10 + E$

$-1 \quad -1 \quad -1 \quad -1$

$9 - E < x < 9 + E$

"

$9 - 0.06 < x < 9 + 0.06$

"

$8.94 < x < 9.06$

"

$x = 0.06$

$0.06 / 3$

"

0.02 inches of the 10 inches of each board

13. $\lim_{x \to} x + 1 = 5$ $f(x) = x + 1$ or $f(x) = x^2$

7.

within 0.06 inches

$5 + E$ $5 - E$

$5 - E < x + 1 < 5 + E$

$-1 \quad -1 \quad -1$

$4 - E < x < 4 + E$

$\|$

$4 - 0.06 < x < 4 + 0.06$

$\|$

$3.94 < x < 4.06$

$\|$

$x = 0.06$

$\sqrt{5 - E} < \sqrt{x^2} < \sqrt{5 + E}$

$\|$

$\sqrt{5 - E} < x < \sqrt{5 + E}$

$\|$

$2.22261 < x < 2.24944$

$\|$

$x = .013415$