

$$\lim_{x \rightarrow 4} 3 = 3 \quad |3 - 3| < \epsilon$$

$$0 < |x - 4| < \delta$$

$$0 < |x + 4| < \delta$$

$$|3 - 3| < \epsilon$$

$$|0| < \epsilon$$

$$\boxed{\delta = \epsilon}$$

$$\lim_{x \rightarrow -2} 7x - 3 = -17 \quad |7x - 3 + 17| < \epsilon$$

$$x \rightarrow -2$$

$$0 < |x - (-2)| < \delta$$

$$0 < |x + 2| < \delta$$

$$|7x + 14| < \epsilon$$

$$|7(x + 2)| < \epsilon$$

$$7|x + 2| < \epsilon$$

$$|x + 2| < \frac{\epsilon}{7}$$

$$\boxed{\delta = \frac{1}{7}\epsilon}$$

$$\lim_{x \rightarrow 1} 3x + 5 = 8$$

$$x \rightarrow 1$$

$$0 < |x - 1| < \delta$$

$$\boxed{\delta = \frac{\epsilon}{3}}$$

$$|3x + 5 - 8| < \epsilon$$

$$|3x - 3| < \epsilon$$

$$|3(x - 1)| < \epsilon$$

$$3|x - 1| < \epsilon$$

$$|x - 1| < \frac{\epsilon}{3}$$

$$\lim_{x \rightarrow 1} \frac{-x^3 - 2x^2 + x + 2}{1 - x^2} = -3$$

$$x \rightarrow 1$$

$$0 < |x - 1| < \delta$$

$$\left| \frac{-x^3 - 2x^2 + x + 2}{1 - x^2} + 3 \right| < \epsilon$$

$$\left| \frac{(x-1)(x+2) - (x+2)}{(x+1)(x-1)} + 3 \right| < \epsilon$$

$$\begin{array}{cccc} -1 & -2 & 1 & 2 \\ -1 & -3 & -2 & \end{array} \quad \begin{array}{ccc} +1 & +2 & +2-2 \\ -1 & -1 & -1+1 \end{array}$$

$$\begin{array}{cccc} -1 & -3 & -2 & 0 \\ (x-1) & (-x^2-3x-2) & & \end{array} \quad \begin{array}{ccc} - & (x+2)+3 & < \epsilon \\ - & x-2+3 & < \epsilon \\ - & x+1 & < \epsilon \\ - & (x-1) & < \epsilon \end{array}$$

$$-1 \quad -3 \quad -2 \quad 0$$

$$(x-1)(-x^2-3x-2)$$

$$(x-1)(-x^2-x)(2x-2)$$

$$(x-1)(-x)(x+1)-2(x+1)$$

$$(x-1)(x+1)(-x-2)$$

$$(x-1)(x+1)-(x+2)$$

$$0 < |x - 1| < \delta \Rightarrow |-(x-1)| < \epsilon$$

$$\boxed{\delta = \epsilon}$$