

$$6. \lim_{x \rightarrow 3} (3x + 2) = 3 \cdot 3 + 2 = \textcircled{11}$$

$$\lim_{x \rightarrow -3} \frac{x^2 + x - 6}{x + 3} = \frac{(-3)^2 - 3 - 6}{\cancel{-3 + 3}0}$$

$$\frac{\cancel{(x+3)}(x-2)}{\cancel{x+3}}$$

$$\lim_{x \rightarrow -3} x - 2 = \textcircled{-5}$$

$$\lim_{x \rightarrow -\frac{1}{2}} \frac{4x^2 + 8x + 3}{2x + 1}$$

$$\lim_{x \rightarrow -\frac{1}{2}} \frac{\cancel{(2x+1)}(2x+3)}{\cancel{2x+1}} = 2\left(-\frac{1}{2}\right) + 3$$

$$= -1 + 3$$

$$= \textcircled{2}$$

$$\lim_{x \rightarrow 0} \frac{\sqrt{x+1} - 1}{x} \left(\frac{\sqrt{x+1} + 1}{\sqrt{x+1} + 1} \right)$$

$$A^2 - B^2 \leftarrow A - B$$

$$A^2 - B^2 = (A + B)(A - B)$$

$$\lim_{x \rightarrow 0} \frac{\cancel{x+1} - 1^0}{x(\sqrt{x+1} + 1)} = \frac{1}{\sqrt{x+1} + 1}$$

$$\frac{1}{\sqrt{0+1} + 1} = \boxed{\frac{1}{2}}$$

$$\lim_{x \rightarrow 0} \frac{\sqrt{x+3} - \sqrt{3}}{x} \left(\frac{\sqrt{x+3} + \sqrt{3}}{\sqrt{x+3} + \sqrt{3}} \right)$$

$$\lim_{x \rightarrow 0} \frac{\cancel{x+3} - 3^0}{x(\sqrt{x+3} + \sqrt{3})} = \frac{1}{\sqrt{x+3} + \sqrt{3}}$$

$$\left(\frac{1}{2\sqrt{3}} \right)$$

$$\frac{\sqrt{3}}{6}$$

$$\lim_{x \rightarrow 0} \frac{\overset{A}{\downarrow} \sqrt{x+3} - \overset{\downarrow B}{\sqrt{3}}}{x} \cdot \frac{\sqrt{x+3} + \sqrt{3}}{\sqrt{x+3} + \sqrt{3}}$$

$$(A-B)(A+B) \rightarrow \underline{A^2 - B^2}$$

$$(A+B)(A-B)$$

$$\frac{\cancel{x+3} - 3^0}{x(\sqrt{x+3} + \sqrt{3})}$$

$$\lim_{x \rightarrow 0} \frac{1}{\sqrt{x+3} + \sqrt{3}} = \frac{1}{\sqrt{3} + \sqrt{3}} = \left(\frac{1}{2\sqrt{3}} \right)$$

$$(\sqrt{x+3} - \sqrt{3})(\sqrt{x+3} + \sqrt{3})$$

$$x+3 + \sqrt{3(x+3)} - \sqrt{3(x+3)} - 3$$

$$x+3-3$$

$$\sqrt{2} \cdot \sqrt{2} = \sqrt{4} = 2$$

$$\sqrt{x} \cdot \sqrt{x} = x$$

$$\sqrt{x+3} \cdot \sqrt{x+3} = x+3$$

$$(A+B)(A-B) = A^2 - B^2$$

$$(\sqrt{x+3} - \sqrt{3})(\sqrt{x+3} + \sqrt{3}) = (\sqrt{x+3})^2 - (\sqrt{3})^2$$

$$x+3-3$$

your turn!

$$\lim_{x \rightarrow 3} \frac{2x^2 + x - 21}{x - 3}$$

$$\lim_{x \rightarrow 0} \frac{\sqrt{x+7} - \sqrt{7}}{2x}$$