

#2 Sec. 2.5

p. 94 #1, 7, 9, 11, 17, 19, 27, 39, 46, 48, 51

$$\textcircled{1} \lim_{x \rightarrow 6} \frac{(x+6)(\cancel{x-6})}{x-6} = \lim_{x \rightarrow 6} x+6 = 12$$

$$\textcircled{7} \lim_{x \rightarrow -2} \frac{(x+2)(x+1)}{x+2} = \lim_{x \rightarrow -2} x+1 = -1$$

$$\frac{x^2-9x-10}{(x-10)(x+1)} \textcircled{9} \lim_{x \rightarrow 5} \frac{(x-5)(2x+1)}{(x+5)(x-5)} = \lim_{x \rightarrow 5} \frac{2x+1}{x+5} = \frac{11}{10}$$

$$\frac{x^2+3x+2}{(x+2)(x+1)} \textcircled{11} \lim_{x \rightarrow -\frac{1}{2}} \frac{2x+1}{(x+1)(2x+1)} = \lim_{x \rightarrow -\frac{1}{2}} \frac{1}{x+1} = \frac{1}{\frac{1}{2}} = 2$$

$$\frac{(x+2)(x+1)}{x^2+3x+2} \textcircled{17} \lim_{x \rightarrow 16} \frac{\sqrt{x}-4}{(\sqrt{x}+4)(\sqrt{x}-4)} = \lim_{x \rightarrow 16} \frac{1}{\sqrt{x}+4} = \frac{1}{8}$$

$$\textcircled{19} \lim_{y \rightarrow 3} \frac{(y+4)(y-3)}{(y-3)(y^2+3y-1)} = \lim_{y \rightarrow 3} \frac{y+4}{y^2+3y-1} = \frac{7}{17}$$

$$\begin{array}{r|rrrr} 3 & 1 & 0 & -10 & 3 \\ & \downarrow & 3 & 9 & -3 \\ \hline & 1 & 3 & -1 & 0 \end{array}$$

$$\textcircled{27} \lim_{x \rightarrow 0} \frac{\cot x}{\csc x} = \lim_{x \rightarrow 0} \frac{\cos x}{\sin x} = \lim_{x \rightarrow 0} \frac{\cos x}{\sin x} \cdot \frac{\sin x}{\sin x}$$

$$= \lim_{x \rightarrow 0} \cos x = 1$$

$$(39) \lim_{x \rightarrow 1} \frac{(x-4)(x+1)}{(x+1)(x^2+x+1)} = \lim_{x \rightarrow 1} \frac{x-4}{x^2+x+1} = \frac{-3}{3} = -1$$

$$(46) \lim_{h \rightarrow -2} 4ah + 7a = 4a(-2) + 7a = -8a + 7a = -a$$

$$(48) \lim_{h \rightarrow 0} \frac{(3a+h)^2 - 9a^2}{h} = \lim_{h \rightarrow 0} \frac{9a^2 + 6ah + h^2 - 9a^2}{h}$$

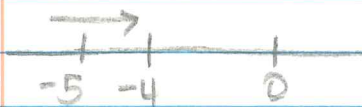
$$\frac{(3a+h)(3a+h)}{9a^2 + 3ah + 3ah + h^2} \lim_{h \rightarrow 0} \frac{bah + h^2}{h} = \lim_{h \rightarrow 0} ba + h = ba$$

$$(5) \lim_{x \rightarrow a} \frac{\sqrt{x} - \sqrt{a}}{(\sqrt{x} + \sqrt{a})(\sqrt{x} - \sqrt{a})} = \lim_{x \rightarrow a} \frac{1}{\sqrt{x} + \sqrt{a}} = \frac{1}{2\sqrt{a}}$$

Extra :

$$(1) \lim_{x \rightarrow -4^-} \frac{x}{x+4} = \infty$$

$$(2) \lim_{x \rightarrow 2^-} \frac{3x}{x^2-4} = -\infty$$



x	y
-4.1	41

$$\frac{-4.1}{-4.1+4} = \frac{-4.1}{-.1} = 41$$

x	y
1.9	neg

$$\frac{3(1.9)}{(1.9)^2-4} = \frac{3(1.9)}{\text{neg}} = \text{neg}$$