

Γ ΛΥΚΕΙΟΥ ΜΕΡΟΣ Α

6.14 1)

a) $\lim_{x \rightarrow 0^+} \frac{3 - 5\sigma v v^2 x}{\eta \mu x} = \lim_{x \rightarrow 0^+} (3 - 5\sigma v v^2 x) \cdot \lim_{x \rightarrow 0^+} \frac{1}{\eta \mu x} = (3 - 5 \cdot 1)(+\infty) = -2 \cdot (+\infty) = \boxed{-\infty}$

b) $\lim_{x \rightarrow \frac{\pi}{2}} \frac{2\sigma \varphi x - \eta \mu x}{1 - \eta \mu x} = \lim_{x \rightarrow \frac{\pi}{2}} (2\sigma \varphi x - \eta \mu x) \cdot \lim_{x \rightarrow \frac{\pi}{2}} \frac{1}{1 - \eta \mu x} = (2 \cdot 0 - 1) \cdot (+\infty) = -1 \cdot (+\infty) = \boxed{-\infty}$

6.14 2)

$$\lim_{x \rightarrow 0} \frac{\eta \mu x - 2}{\sigma v v x - 1} = \lim_{x \rightarrow 0} (\eta \mu x - 2) \cdot \lim_{x \rightarrow 0} \frac{1}{\sigma v v x - 1} = (0 - 2)(-\infty) = \boxed{+\infty}$$

6.14 3)

$$\begin{aligned} \lim_{x \rightarrow 0^-} \frac{3\eta \mu^2 x - 5\sigma v v x}{\eta \mu x} &= \lim_{x \rightarrow 0^-} (3\eta \mu^2 x - 5\sigma v v x) \cdot \lim_{x \rightarrow 0^-} \frac{1}{\eta \mu x} = (3 \cdot 0^2 - 5 \cdot 1) \cdot (-\infty) = \\ &= -5 \cdot (-\infty) = \boxed{+\infty} \end{aligned}$$

6.14 4)

$$\lim_{x \rightarrow \frac{\pi}{2}} \frac{\sigma v v x - 1}{2\eta \mu x - 2} = \lim_{x \rightarrow \frac{\pi}{2}} \frac{\sigma v v x - 1}{2(\eta \mu x - 1)} = \lim_{x \rightarrow \frac{\pi}{2}} \frac{\sigma v v x - 1}{2} \cdot \lim_{x \rightarrow \frac{\pi}{2}} \frac{1}{\eta \mu x - 1} \stackrel{\eta \mu x - 1 \leq 0}{=} \frac{0 - 1}{2} \cdot (-\infty) = \boxed{+\infty}$$

6.14 5)

$$\lim_{x \rightarrow 0} \frac{\varepsilon \varphi x - 5}{1 - \sigma v v x} = \lim_{x \rightarrow 0} (\varepsilon \varphi x - 5) \cdot \lim_{x \rightarrow 0} \frac{1}{1 - \sigma v v x} = -5 \cdot (+\infty) = \boxed{-\infty}$$

6.14 6)

$$\lim_{x \rightarrow \pi} \frac{4\varepsilon \varphi x + 1}{1 + \sigma v v x} = \lim_{x \rightarrow \pi} (4\varepsilon \varphi x + 1) \cdot \lim_{x \rightarrow \pi} \frac{1}{1 + \sigma v v x} = (4 \cdot 0 + 1) \cdot (+\infty) = \boxed{+\infty}$$

6.14 7)

$$\lim_{x \rightarrow \frac{3\pi}{2}} \frac{4\sigma \varphi x - \eta \mu x}{1 + \eta \mu x} = \lim_{x \rightarrow \frac{3\pi}{2}} (4\sigma \varphi x - \eta \mu x) \cdot \lim_{x \rightarrow \frac{3\pi}{2}} \frac{1}{1 + \eta \mu x} = (4 \cdot 0 - (-1)) \cdot (+\infty) = \boxed{+\infty}$$