

الف) $\rightarrow \delta$ $\leftarrow \rightarrow \delta$ ①

الف) $\rightarrow [x^+] = 2 \Rightarrow f[x^+] = 1 - 3 = -2$ $\leftarrow [x^-] = 1 \Rightarrow f[x^-] = 1 - 3 = -2$ ②

الف) $x > 2 \Rightarrow f(x) > 1 \Rightarrow f(x) - 3 > -2 \Rightarrow [f(x) - 3] = -2$ ③

ب) $x < 2 \Rightarrow f(x) < 1 \Rightarrow f(x) - 3 < -2 \Rightarrow [f(x) - 3] = -2$ ④

الف) $\rightarrow \delta$ $\leftarrow \rightarrow \delta$
 $\lim_{x \rightarrow 2} f(x) = \delta \Rightarrow [\lim_{x \rightarrow 2} (f(x) - 3)] = [\delta] \Rightarrow \delta$ ⑤

الف) $\frac{9}{0^+} = +\infty$ $\frac{9}{0^-} = -\infty$ $\Rightarrow \frac{9}{(0^+)^2} = \frac{9}{0^+} = +\infty$ ⑥

الف) $\frac{9}{0^+} = +\infty$ $\frac{9}{\sqrt{0^-}} = 0^-$ $\Rightarrow \frac{f(x) - 3}{\sqrt{(x-1)(x-2)}} \left[\frac{9}{\sqrt{0^+}} = +\infty \right]$ ⑦

الف) $\frac{f(x) - 3}{(x-1)(x-2)} \left[\frac{9}{0^-} = -\infty \right]$ $\frac{9}{0^+} = +\infty$ ⑧

ب) $\frac{9}{[0^+]} = 0 = \frac{9}{0}$ $\frac{9}{[0^-]} = \frac{9}{-1} = -9$

ا) $x > 3 \Rightarrow 3x > 9 \Rightarrow -x < -3 \Rightarrow -2x < -6$ (8)
 $\Rightarrow [2x] + [-2x] = 9 - 7 = 2$

$x < 3 \Rightarrow 3x < 9 \Rightarrow -2x > -6$ حد دارد
 $\Rightarrow [2x] + [-2x] = 8 - 6 = 2$

ب) $x > -6 \Rightarrow 2x > -12 \Rightarrow -4x < 24$
 $\Rightarrow [2x] + [-4x] = -12 + 24 = 12$ حد دارد
 $x < -6 \Rightarrow 2x < -12 \Rightarrow -4x > 24$
 $\Rightarrow [2x] + [-4x] = -12 + 24 = 12$

~~ا) $x^2 - 4x$ $x \neq 2$~~ (9)
 $\Rightarrow (x-2)^2 - 4 = x^2 - 4x$

$\Rightarrow [(x-2)^2 - 4] = [x^2 - 4x] \Rightarrow [(x-2)^2] - 4$
 $\Rightarrow \lim_{x \rightarrow 2} [(x-2)^2] - 4 = [(0^+)^2] - 4 = [0^+] - 4 = -4$

ب) $9x - x^2 = -(x-3)^2 + 9 \Rightarrow \lim_{x \rightarrow 3} [9 - (x-3)^2]$
 $= [9 - (0^+)^2] = [9 - 0^+] = [9^-] = 9$ (10)

ا) $\frac{-1}{x-1}$ $\frac{1}{x-1}$
 $\downarrow x^-$ $\downarrow x^+$
 $(-)$ $(+)$

ب) $\frac{1^+}{1^-} \frac{0^+}{(1^+)(1^+)} \frac{0^+}{(0^+)(2^+)}$
 $\frac{1^-}{(0^-)(2^-)} = +\infty$