

الف) $y = \sqrt{\frac{x^2 - 4x + 4}{x^2 - 1}} \geq 0 \Rightarrow \sqrt{\frac{(x-1)(x-2)}{(x-1)(x+1)}} \geq 0 \Rightarrow \frac{-1}{+} - \frac{+}{-} +$
 $DF: [2, +\infty)$ ج

ب) $y = \sqrt[3]{\frac{x^2 - 4x + 4}{x^2 - 1}} \Rightarrow \sqrt[3]{\frac{(x-1)(x-2)}{(x+1)(x-1)}} \Rightarrow \frac{-1}{+} - \frac{+}{-} +$
 $DF: (-\infty, -1) \cup (-1, 2) \cup (2, +\infty) \quad \text{!} \quad (-\infty, -1) \cup (-1, 1) \cup (1, +\infty)$

الف) $y = \log(x^2 - 4x) \Rightarrow x^2 - 4x > 0 \Rightarrow x(x-4) > 0 \Rightarrow \frac{+}{+} - \frac{+}{-} + \quad DF: (-\infty, 0) \cup (4, +\infty)$ ج
 ب) $y = \log_{\frac{1}{2}} |x-2| \Rightarrow |x-2| > 0 \Rightarrow (x-2)(x+2) > 0 \Rightarrow \frac{-}{+} - \frac{+}{-} \Rightarrow x = (-2, 2) \ominus$

$|x|-2 > 0 \Rightarrow |x| > 2 \Rightarrow x > 2 \oplus \quad |x|-2 \neq 1 \quad |x| \neq 3 \Rightarrow x \neq \pm 3 \ominus \quad DF: \emptyset \cap \emptyset \cap \emptyset \cap \emptyset \Rightarrow (-2, -3) \cup (-3, -2) \cup (2, 3) \cup (3, 2)$
 ج) $\log \frac{x^2 - 4x + 4}{x-2} \Rightarrow \frac{x^2 - 4x + 4}{x-2} > 0 \Rightarrow \frac{(x-2)(x-2)}{(x-2)} > 0 \Rightarrow \frac{+}{+} - \frac{+}{-} \Rightarrow x = (-\infty, 2) \cup (2, +\infty) \ominus$

$1-x > 0 \Rightarrow 1 > x \oplus \quad 1-x \neq 1 \Rightarrow x \neq 0 \oplus \quad DF: \emptyset \cap \emptyset \cap \emptyset \Rightarrow (1, 0) \cup (0, 1)$
 د) $y = \sqrt{x^2 - 11x + 28} + \log \sqrt{x^2 - 4x} \Rightarrow (x-4)(x-7) > 0 \Rightarrow \frac{-}{-} - \frac{+}{+} \Rightarrow x = (-\infty, 4) \cup (7, +\infty) \ominus$
 $(x-4)(x-7) > 0 \Rightarrow \frac{+}{+} - \frac{+}{-} \Rightarrow x = (-\infty, 4) \cup (7, +\infty) \ominus \quad x \neq 1 \ominus \quad DF: \emptyset \cap \emptyset \cap \emptyset \cap \emptyset \Rightarrow (0, 1) \cup (1, 4]$

$y = \frac{x^2 - x}{x^2 + x} \Rightarrow \frac{x(x-1)}{x(x+1)} \Rightarrow \frac{-1}{+} - \frac{+}{-} + \quad DF: R. \quad \text{!} \quad (-\infty, -1) \cup (-1, 0) \cup (0, 1) \cup (1, +\infty)$

مشتق

	-1	0	1
$x^2 - x$	+	+	-
$x^2 + x$	+	-	+
$p(x)$	+	-	+

$y = \sqrt{\frac{x - f(x)}{f(x)}} \geq 0$
 $x - f(x) \rightarrow x - f(x) \Rightarrow x, -1$
 $f(x) = 0 \rightarrow x = 2$
 $DF: (-2, -1] \cup (2, 3)$

