

الف) $\frac{x^2 - 4x}{x^2 - x} \geq 0$

$x^2 - 4x \geq 0 \rightarrow x(x - 4) \geq 0$

$x^2 - x \neq 0$

$x(x - 1) \neq 0$

$P = (-1, 0) \cup (0, 1) \cup (4, +\infty)$

ب) $\frac{x^3 \cdot x^3}{x^3 - x} \geq 0$

$x^6 - x^3 > 0$

$x^3(x^3 - 1) > 0$

$x^3(x - 1)(x^2 + x + 1) > 0$

$x^3(x - 1) > 0$

$P = (-\infty, -1) \cup (-1, 0) \cup (0, 1) \cup (1, +\infty)$

الف) $x + |x| > 0$

$|x| > -x$

$P = (0, +\infty) = \mathbb{R}^+$

ب) $x|x| > 0$

$|x| > 0$

$P = (0, +\infty) = \mathbb{R}^+$

الف) $2 - [x] \geq 0$

$[x] \leq 2$

$x < 3$

$P = (-\infty, 3)$

ب) $2 - [x] > 0$

$[x] < 2$

$x < 2$

$P = (-\infty, 2)$

الف) $[x - \frac{1}{p}] + [x + \frac{2}{p}] \geq 0$

$[x - \frac{1}{p}] + 1 - 1 + [x + \frac{2}{p}] \geq 0$

$[x + \frac{2}{p}] - 1 + [x + \frac{2}{p}] \geq 0$

$[x + \frac{2}{p}] + [x + \frac{2}{p}] \geq 1 \rightarrow 2[x + \frac{2}{p}] \geq 1$

$[x + \frac{2}{p}] \geq \frac{1}{2}$

$P = [\frac{1}{2}, +\infty)$

ب) $[x - \frac{1}{p}] + [x + \frac{1}{p}] \geq 0$

$x \in \mathbb{Z} \quad [x] + [-x] = 0$

$x \notin \mathbb{Z} \quad [x] + [-x] = -1$

$x - \frac{1}{p} \in \mathbb{Z} \quad x \in \mathbb{Z} + \frac{1}{p}$

$P = \{x \mid x = a + \frac{1}{p}, a \in \mathbb{Z}\}$

الف) $\sin x - 1 \neq 0$

$\sin x \neq 1$

$P = \mathbb{R} - \{2k\pi + \frac{\pi}{2}\}$

ب) $\sin^2 x - 1 \neq 0$

$\sin^2 x \neq 1$

$\sin x \neq \pm 1$

$P = \mathbb{R} - \{k\pi \pm \frac{\pi}{2}\}$

