

الف) $y = \frac{x^3 - x^2}{(x-1)(x-2)} = \frac{x^2(x-1)}{(x-1)(x-2)} = \frac{x^2}{x-2}$ $\Rightarrow y = \frac{x^2}{(x-2)(x-2)} = \frac{x^2}{(x-2)^2}$

الف) $y = \frac{x^3 - 3x^2 + 2}{x^2 - 1} = \frac{x^2(x-3) + 2}{(x-1)(x+1)}$ $\Rightarrow y = \frac{x^3 - 3x^2 + 2}{x^2 - 1} = \frac{x^2(x-3) + 2}{(x-1)(x+1)}$

الف) $y = \frac{x^4 - x^2}{x^2 + x + 2} = \frac{x^2(x^2 - 1)}{(x+1)(x+2)}$ $\Rightarrow y = \frac{x^4 - x^2}{x^2 + x + 2} = \frac{x^2(x^2 - 1)}{(x+1)(x+2)}$

الف) $y = \sqrt{\frac{x^3 - 1}{x^3 - x}} = \sqrt{\frac{(x-1)(x^2 + x + 1)}{x(x-1)(x+1)}} = \sqrt{\frac{x^2 + x + 1}{x(x+1)}}$ $\Rightarrow D_f = (-\infty, -1) \cup (0, 1) \cup (1, +\infty)$

ب) $y = \sqrt{\frac{x^3 - 1}{x^3 - 8x + 8}} = \sqrt{\frac{(x-1)(x^2 + x + 1)}{(x-2)(x^2 + 4x + 4)}} = \sqrt{\frac{(x-1)(x^2 + x + 1)}{(x-2)(x+2)^2}}$ $\Rightarrow D_f = (-\infty, -2) \cup (2, +\infty)$