

الف) $\sqrt{x^2 - 4x + 4} \Rightarrow -\frac{b}{2a} \Rightarrow x = 2 \quad y = -2 \Rightarrow \sqrt{[2, +\infty)}$
 $[0, \infty)$ ✓ 1,5

ب) $-\frac{b}{2a} = 2 \Rightarrow x = 2, y = 1 \Rightarrow \sqrt{[-\infty, 1]} = [0, \sqrt{1}]$

الف) $R_f = \mathbb{R} = \mathbb{R}$ ✓ 2
 ب) $R_f = [0, +\infty)$ ✓

الف) $R_f = \mathbb{R} - [2]$ ✓ 2
 ب) $R_f = [0, +\infty) - [2]$ ✓

$x - 2 = 0 \Rightarrow x = 2, y = \frac{3}{1} = 3 \Rightarrow x = 0 \Rightarrow y = -2$ (الف)
 $y = \frac{3(2x-1)}{1-2x} = -2 \quad x \neq \frac{1}{2}$ ✓ 2

الف) $R_f = (-\infty, -2] \cup [2, +\infty)$
 $a + \frac{1}{a} \rightarrow \text{Castor} \rightarrow R_f = [2, +\infty)$ 0
 ب) $R_f = [2, +\infty)$
 $\rightarrow a > 0 \rightarrow R_f = \sqrt[3]{(-\infty, -2] \cup [2, +\infty)}$
 $\rightarrow a < 0$

$R_f = (-\infty, \sqrt[3]{-2}] \cup [\sqrt[3]{2}, +\infty)$