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$$y^2 - 2y - 150 \quad (ب)$$

$$4y^2 + 4y \geq 0$$

$$\Delta \geq 0 \quad y(y+1) \geq 0$$

$$\frac{-1 \pm \sqrt{1+600}}{2} \quad R_f = [-\infty, -1] \cup [0, \infty)$$

$$(n-1)^2 y - 1 \quad (الف)$$

$$n = \sqrt{y-1} + 1$$

$$R_f = R \quad \checkmark$$

$$n = \frac{2y \pm \sqrt{\Delta}}{2y} \rightarrow y \neq 0$$

$$y_{max} = -1 \quad (ب)$$

$$R_f = \sqrt{-1+100} = [0, \infty) \quad \checkmark$$

$$y_{max} = \frac{f}{2a} = 2 \quad (الف)$$

$$y_{max} = 4 \quad R_f = [4, \infty) \quad \checkmark$$

$$y_{max} = 9 \quad R_f = [0, 9] \quad \checkmark \quad (ب)$$

$$y_{max} = 12 \quad R_f = (-\infty, 12] \quad \checkmark \quad (ب)$$

$$R_f = R \quad \checkmark \quad (ب)$$

$$R_f = R \quad \checkmark \quad (الف)$$

$$R_f = [0, \infty) \quad \checkmark \quad (ب)$$

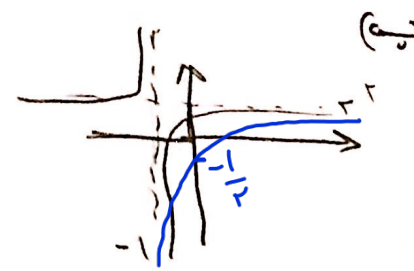
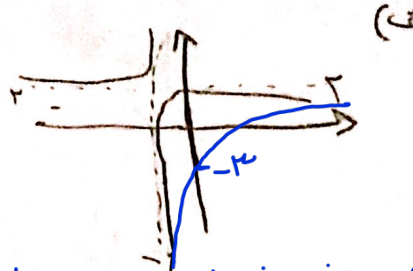
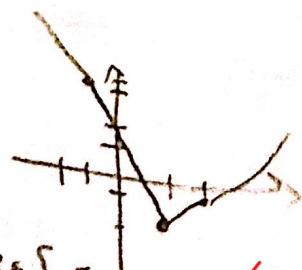
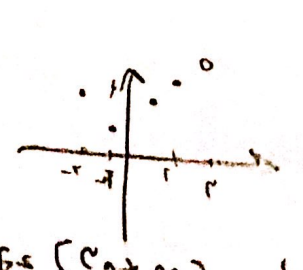
$$R_f = [0, \infty) \quad \checkmark \quad (ب)$$

$$R_f = R - \{1\} \quad \checkmark \quad (ب)$$

$$R_f = R - \{1\} \quad \checkmark \quad (الف)$$

$$R_f = [0, \infty) \quad \checkmark \quad (ب)$$

$$R_f = [0, \infty) - \{\sqrt{2}\} \quad \checkmark \quad (الف)$$

 (ب)	 (الف)	١, ٥ ٦
٢ $\frac{x^2 + 1}{x^2} = y$ $R_f = (-\infty, -2] \cup (2, +\infty)$ ✓ $R_f = (-\infty, -2] \cup (2, +\infty)$ ✓	(ب) $\sin x + \frac{1}{\sin x} = y$ $R_y = (-\infty, -2] \cup (2, +\infty)$ ✓ (ج) $\sqrt{x} + \frac{1}{\sqrt{x}} = y$ $(2, +\infty) \cup (-\infty, -2]$ ✓	٢ ٧
(ب) $\frac{x^2 + 1}{\sqrt{x^2 + 1}} = y$ $\sqrt{x^2 + 1} = y$ $R_f = (\frac{1}{2}, +\infty)$ ✓	(الف) $\frac{1}{x^2} + \frac{1}{x} = y$ $R_f = [\frac{1}{2}, +\infty)$ ✓	٢ ٨
$y = x-2 + 2x+1 \Rightarrow$ $\begin{cases} x > 2 \\ -2 \leq x \leq 2 \\ x < -2 \end{cases}$ رسم تابع؟		١١ ٩
(ب)  $R_f = [-2, +\infty)$ ✓	(الف)  $R_f = (2, +\infty)$ ✓	٢ ١٠

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