

$$y = x^3 - 3x^2 + 3x - 1 + 1 \rightarrow y = (x-1)^3 \rightarrow x = \sqrt[3]{y+1}$$

$$\hookrightarrow R_f = \mathbb{R} \checkmark$$

$$y = \frac{1}{x^2 - 2x} \rightarrow (x-1)^2 - 1 = \frac{1}{y} \rightarrow x-1 = \sqrt{\frac{y+1}{y}}$$

$$\rightarrow x = \sqrt{\frac{y+1}{y}} + 1 \rightsquigarrow \frac{-1}{+\phi - \phi} + R_f = (-\infty, -1] \cup (0, +\infty) \checkmark$$

$$\text{الف) } R_f = \left[\frac{-1}{\sqrt{y+1}}, +\infty \right) \checkmark$$

$$\text{ب) } R_f = (-\infty, -\frac{1}{1+1}] \checkmark$$

$$\text{ج) } R_{\text{زیر}} = \left[\frac{-1}{\sqrt{y+1}}, +\infty \right) \rightarrow R_f = [0, +\infty) \checkmark$$

$$\text{د) } R_{\text{زیر}} = (-\infty, -\frac{1}{\sqrt{y+1}}] \rightarrow R_f = [0, 1] \checkmark$$

$$\text{الف) } y = x^3 - 8x^2 + 2x + 1$$

$$\hookrightarrow R_f = \mathbb{R} \checkmark$$

$$\text{ب) } x^3 - 4x^2 + 2x + 1 \rightarrow R_f = \mathbb{R} \checkmark$$

$$\text{ج) } \sqrt{x^3 - 4x^2 + 2x + 1} \rightarrow y \in \{n \mid n \in \mathbb{R}\} \rightarrow R_f = [0, +\infty) \checkmark$$

$$\text{د) } y = (x^3 - 4x^2 + 2x + 1)^2 \rightarrow y \in \{n^2 \mid n \in \mathbb{R}\} \rightarrow R_f = [0, +\infty) \checkmark$$

$$\text{الف) } y = \frac{2x+1}{2x-1} \rightarrow R_f = \mathbb{R} - \{1\} \checkmark$$

$$\text{ب) } \frac{2x+1}{2x+1} \rightarrow R_f = \mathbb{R} - \{1\} \checkmark$$

$$\text{الف) } y = \sqrt{\frac{2x+1}{x+1}} \rightarrow R_{\text{زیر}} = \mathbb{R} - \{1\} \rightarrow R_f = [0, \sqrt{2}) \cup (\sqrt{2}, +\infty) \checkmark$$

$$\text{ب) } y = \sqrt{\frac{2x+1}{x-1}} \rightarrow R_{\text{زیر}} = \mathbb{R} - \{-1\} \rightarrow R_f = [0, +\infty) \checkmark$$

