

Date:

Subject:

①

بسم رب الذي خلق الهدى
مستأثرت من انوار

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الف) $y^3 = 2x^2 + 2x - 1$

تابع هست ✓

$$x_1 = x_2 \Rightarrow y_1^3 = y_2^3 \Rightarrow y_1 = y_2$$

②

ب) $x \cos y = y \cos x \rightarrow$ مثال نقیض
 $\frac{\pi}{4} \cos y = y \times 0$ $x = \frac{\pi}{4}$

$$\frac{\pi}{4} \cos y = 0 \Rightarrow y = \frac{\pi}{2}$$

 $\frac{\pi}{2}$ جز

تابع نیست ✓

ج) $x + y - 2\sqrt{xy} = 0 \quad (\sqrt{x} - \sqrt{y})^2 = 0$

$$y = x$$

 $x > 0$

تابع هست ✓

د) $xy^2 + 2x - y^2 - 2y = 0$

$$x(y^2 + 2) = y(y^2 + 2) \Rightarrow y^2 + 2 \neq 0$$

$$y = x$$

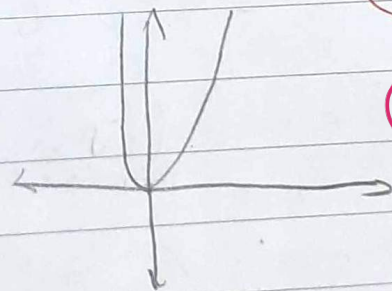
تابع هست ✓

الف) $|y| + x^2 = 2y$

$$y > 0 \rightarrow x^2 = y$$

$$y < 0 \rightarrow \frac{x^2}{3} = y$$

تابع هست ✓



④

②

ب) $[y] + [x] = 1$

مثال نقیض $x = 0 \rightarrow [y] = 1 \Rightarrow 1 \leq y < 2$ تابع نیست ✓

$$rx - b \begin{cases} x - 1 \leq -r \rightarrow x \leq -1 \\ x - 1 \geq r \rightarrow x \geq r \\ a + rx \leq 0 \leq x \leq r \end{cases}$$

$$x = r \Rightarrow 1 - b = a + r$$

$$a + b = 1 \quad \checkmark$$

(r) (r)

$$\sqrt{-x^2 - bx + a}$$

$$-b^r - b^r + a = 0$$

$$a = 2b^r$$

(r) (f)

$$-a^r - ab + a = 0$$

$$a \neq 0 \rightarrow -a - b + 1 = 0 \rightarrow \underbrace{r b^r}_{\tilde{r} b^r} + b - 1 = 0 \quad \text{جواب} \quad b = -1, b = \frac{1}{r}$$

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$$a = r(1-1)^r \Rightarrow a = r \quad a + b = 1 \quad \checkmark$$

$$C = -rb$$

$$a = 0$$

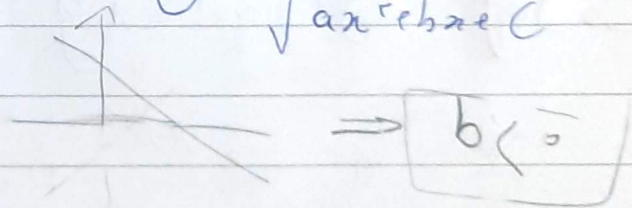
$$y = \frac{r}{\sqrt{ax^2 + bx + c}}$$

(r) (d)

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$$rb + C = 0$$

$$\underbrace{r(0)}_{-rb} + C + rb = 0 \Rightarrow b < 0$$



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$$\frac{(r+a)x + (ab+r)}{x+b}$$

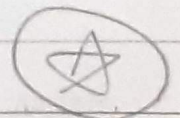
$$\sqrt{\frac{rx + ra + ab}{x+b}}$$

(f)

$$\frac{(r+a)x + (-ra+r)}{x-r}$$

$$\rightarrow b = -r \quad \checkmark$$

(r)

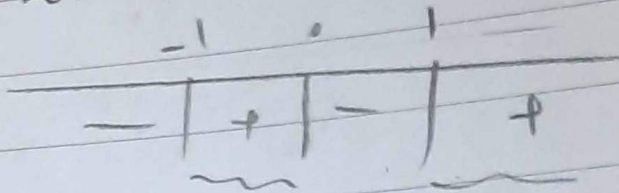


Date:

(✓)

الف) $y = \sqrt{x^2 - x}$

$$x(x-1)(x+1)$$



(r)

$$D_f = [-1, 0] \cup [1, +\infty)$$

ب) $y = \frac{1}{\sqrt{|x|-1}}$

$$|x| > 1$$

$$x > 1$$

$$x < -1$$

$$D_f = \mathbb{R} - [-1, 1]$$

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ج) $y = \sqrt{\frac{1}{|x| - [x]}}$

$$|x| \neq [x]$$

$$\begin{matrix} \oplus & \ominus & \ominus \\ x & x & x \end{matrix}$$

$$D_f = \mathbb{R} - \{x \in \mathbb{Z}\}$$

(r)

(✓)

1w

د) $\sqrt{x} + \sqrt{y} = 9$

$$\rightarrow \mathbb{R} - \{x^2 \cup y^2\}$$

الرقم
بسيط

$$\sqrt{y} < 0 \Rightarrow \text{نن} \Rightarrow$$

$$0 \leq x \leq 1$$

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

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

$$2x - \frac{1}{2} \geq 0$$

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

$$[2x - \frac{1}{2}] > -1$$

$$x \geq \frac{1}{4}$$

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$$\log_{10} (2x - a) \leq 1$$

$$2x - a \leq 10$$

$$x \leq \frac{10 + a}{2}$$

MAHAN