

ریاضیات دیفرانسیل - یازدهم دبیرستان A

سوال (۱)

$$y = \frac{x+3}{2x^3+3x^2-11x+3} \rightarrow D_f = R - \left\{1, -\frac{1}{2}, \frac{1}{3}\right\}$$

$$\begin{array}{r}
 \begin{array}{l}
 \xrightarrow{n+3} \\
 (n-1)(2n^2+5n-3) \\
 \downarrow \quad \downarrow \quad \downarrow \\
 1 \quad -2 \quad \frac{1}{3}
 \end{array} \\
 \rightarrow \begin{array}{r}
 2x^3+3x^2-11x+3 \quad | \quad x-1 \\
 \underline{-2x^3+2x^2} \\
 5x^2-11x+3 \\
 \underline{-5x^2+5x} \\
 -6x+3 \\
 \underline{+6x-6} \\
 -3
 \end{array} \quad \begin{array}{l}
 2x^2+5x-3 \quad | \quad x-1 \\
 \underline{-2x^2+2x} \\
 7x-3 \\
 \underline{-7x+7} \\
 4
 \end{array} \\
 \begin{array}{r}
 2x^2+5x-3 \quad | \quad x-1 \\
 \underline{-2x^2+2x} \\
 7x-3 \\
 \underline{-7x+7} \\
 4
 \end{array} \quad \begin{array}{l}
 2x^2+5x-3 \quad | \quad x-1 \\
 \underline{-2x^2+2x} \\
 7x-3 \\
 \underline{-7x+7} \\
 4
 \end{array}
 \end{array}$$

$$y = \frac{n+3}{2n^3+9n^2+10n+3} \rightarrow D_f = R - \left\{\frac{1}{2}, -\frac{3}{2}, -1\right\}$$

$$\begin{array}{r}
 \begin{array}{l}
 \xrightarrow{n+3} \\
 (n+1)(2n^2+7n+3) \\
 \downarrow \quad \downarrow \quad \downarrow \\
 -2 \quad -9 \quad -10 \quad -3
 \end{array} \\
 \rightarrow \begin{array}{r}
 2n^3+9n^2+10n+3 \quad | \quad n+1 \\
 \underline{-2n^3-2n^2} \\
 11n^2+10n+3 \\
 \underline{-11n^2-11n} \\
 20n+3 \\
 \underline{-20n-20} \\
 -17
 \end{array} \quad \begin{array}{l}
 2n^2+7n+3 \quad | \quad n+1 \\
 \underline{-2n^2-2n} \\
 9n+3 \\
 \underline{-9n-9} \\
 -6
 \end{array} \\
 \begin{array}{r}
 2n^2+7n+3 \quad | \quad n+1 \\
 \underline{-2n^2-2n} \\
 9n+3 \\
 \underline{-9n-9} \\
 -6
 \end{array} \quad \begin{array}{l}
 2n^2+7n+3 \quad | \quad n+1 \\
 \underline{-2n^2-2n} \\
 9n+3 \\
 \underline{-9n-9} \\
 -6
 \end{array}
 \end{array}$$

سوال (۲)

$$y = \frac{n+3}{n^3-2n^2+2n-1} \rightarrow D_f = R - \{1\}$$

$$\begin{array}{r}
 \begin{array}{l}
 \xrightarrow{n+3} \\
 (n-1)(n^2-n+1) \\
 \downarrow \quad \downarrow \quad \downarrow \\
 1 \quad -1 \quad 1
 \end{array} \\
 \rightarrow \begin{array}{r}
 n^3-2n^2+2n-1 \quad | \quad n-1 \\
 \underline{-n^3+n^2} \\
 -n^2+2n-1 \\
 \underline{+n^2-n} \\
 -n-1 \\
 \underline{+n+1} \\
 0
 \end{array} \quad \begin{array}{l}
 n^2-n+1 \quad | \quad n-1 \\
 \underline{-n^2+n} \\
 1 \\
 \underline{-1+1} \\
 0
 \end{array}
 \end{array}$$

$$y = \frac{n+3}{n^3-2n^2+2n-1} = \frac{n+3}{(n-1)(n^2-n+1)} \rightarrow D_f = R - \{1, \frac{1}{2}, \frac{1}{3}\}$$

سوال (۳)

$$y = \frac{r}{n^2-\delta|x-1|-2n+\delta}$$

$$n^2-\delta|x-1|-2n+\delta \neq 0 \rightarrow n^2-\delta n+\delta-2n+\delta \neq 0$$

$$\rightarrow n^2-\delta n+\delta-2n+\delta \neq 0 \rightarrow n^2+\delta n \neq 0$$

$$\rightarrow n \neq 0, \delta \neq 0$$

$$D_f = R - \{0, \delta, 0, \delta\}$$



$$f(n) = \sqrt{n^2 + 2n + 2 - m^2}$$

$$\Delta = 0 \Leftrightarrow D_f = R \quad (\text{سوال 9})$$

$$\Delta = b^2 - 4ac = 4 - 4 + 4m^2 = 0 \quad 4m^2 = 0$$

$$\rightarrow m^2 = 0$$

$$|2 = m \quad \text{به افتداد سیمین، میسین سیمین} \quad m = \pm 1$$

$$f(n) = \frac{\sqrt{4 - n^2}}{[n] + [-n] + 1}$$

$$4 - n^2 \geq 0 \rightarrow (2 - n)(2 + n) \geq 0 \quad \begin{array}{c} -2 \quad 2 \\ | \quad | \\ - \quad + \end{array} \quad (\text{سوال 10})$$

$$\text{D} \subseteq [-2, 2]$$

فقط در اعدادی z صحت معبر شود چه $[n] + [-n] \neq -1$

و در اعدادی بقیه موارد $1 - 5$ شود در نتیجه دامنه D شود

$$\text{D} = \{-2, -1, 0, 1, 2\}$$