

Year: _____ Month: _____ Date: ()

Subject: _____

لنتن انا على

الف) $y = \frac{x+5}{x^2-10x^2+31x-15}$

0, 1, 5

$$\begin{array}{r} x^2-10x^2+31x-15 \\ - (x^2-10x^2+31x-15) \\ \hline 0 \end{array}$$

$$\begin{array}{r} x^2-10x^2+31x-15 \\ - (x^2-10x^2+31x-15) \\ \hline 0 \end{array}$$

$$\frac{f(x)}{x} = f(x)(x-1) = f(x) - f(x)$$

$$\frac{-2fx^2}{x} = -2fx(x+1) = -2fx^2 - 2fx$$

$$\frac{\Delta \Delta y}{x} = \Delta \Delta (x+1) = \Delta \Delta x + \Delta \Delta$$

$$\begin{array}{r} x+5 \\ x^2-10x^2+31x-15 \\ \hline 0 \end{array}$$

$$\frac{1 \Delta y}{x} = 1 \Delta (x-1) = 1 \Delta x - 1 \Delta$$

$$D = R - \left\{ \frac{3}{2}, \frac{5}{2} \right\} R - \left\{ 1, \frac{3}{2}, \frac{5}{2} \right\}$$

$$(x-4)(x-10)$$

الف) $y = \frac{x+3}{x^2-10x^2-15}$

$$\begin{array}{r} x^2-10x^2-15 \\ - (x^2-10x^2-15) \\ \hline 0 \end{array}$$

$$(x+7)(x-4)$$

$$x = -\frac{7}{3} \quad x = \frac{4}{3} = x$$

$$D = R - \left\{ -\frac{7}{3}, \frac{4}{3} \right\} D = R - \left\{ 1, \frac{3}{2}, \frac{5}{2} \right\}$$

الف) $y = \frac{x+1}{x-\sqrt{3-2x}}$

0, 1, 5

$$\begin{array}{l} x \cdot \sqrt{3-2x} \neq 0 \\ x \neq \sqrt{3-2x} \\ x^2 \neq 3-2x \\ x^2+2x \neq 3 \end{array}$$

0, 1, 5

1) $y = \frac{\sinh x}{r \cosh x - 1}$

$r \cosh x - 1 \neq 0$
 $r \cosh x \neq 1$
 $\cosh x \neq \frac{1}{r}$

$D_f = R - \left\{ \frac{1}{r} K R + \frac{R}{r} \right\} = R - \left\{ \frac{1}{r} K R + \frac{1}{r} \right\}$ ✓

1. (ω)

2) $y = \frac{r \cosh x + 1}{r \sinh x + 1}$

$r \sinh x + 1 \neq 0$
 $r \sinh x \neq -1$

$D_f = R - \left\{ \frac{1}{r} K R + \frac{R}{r} \right\} = R - \left\{ \frac{1}{r} K R + \frac{1}{r} \right\}$ ✓

3) $y = \frac{\tanh x + r}{\cosh x - 1}$

$\cosh x \neq 1$
 $\frac{\cosh x}{\sinh x} \rightarrow \sinh x \neq 0 \rightarrow \cosh x \neq 0$

$D_f = R - \left\{ \frac{1}{r} K R + \frac{R}{r} \right\}$

4) $y = \frac{\sinh x + 1}{r \sinh x - r}$

$r \sinh x - r \neq 0$
 $r \sinh x \neq r$
 $\sinh x \neq 1$

$D_f = R - \left\{ \frac{1}{r} K R + \frac{R}{r} \right\} = R - \left\{ \frac{1}{r} K R + \frac{1}{r} \right\}$ ✓

$\sinh x \neq \pm \frac{\sqrt{r}}{r}$

1) $x^2 - \omega x + \gamma > 0$

$(x - \gamma)(x - \omega) > 0$
 $n = \gamma \quad n = \omega$
 $\frac{\gamma}{\omega} - \frac{\omega}{\gamma} +$
 $D = (-\infty, \gamma) \cup (\omega, +\infty)$

5

2) $x^2 - \gamma x + \omega < 0$

$(x - 1)(x - \omega) < 0$
 $n = 1 \quad n = \omega$
 $\frac{1}{\omega} - \frac{\omega}{1} +$
 $D = (1, \omega)$

3) $x^2 + \gamma x + \omega > 0$

$(x + 1)(x + \omega) > 0$
 $n = -1 \quad n = -\omega$
 $\frac{-\omega}{-1} - \frac{-1}{-\omega} +$
 $D = (-\infty, -\omega] \cup [-1, +\infty)$

4) $x^2 - \gamma x + \gamma < 0$

$(x - 1)(x - \gamma) < 0$
 $n = 1 \quad n = \gamma$
 $\frac{1}{\gamma} - \frac{\gamma}{1} +$
 $D = [1, \gamma]$

1) $\frac{x^2 - \gamma x + \gamma}{x - \omega} < 0$

$(x - 1)(x - \gamma) < 0$
 $n = 1 \quad n = \gamma$
 $\frac{1}{\gamma} - \frac{\gamma}{1} +$

$D = (-\infty, 1) \cup (\gamma, \omega)$

5

2) $\frac{x^2 - 1}{x^2 - \gamma x + \omega} \geq 0$

$(x + 1)(x - 1) \geq 0$
 $n = -1 \quad n = 1$
 $\frac{-1}{1} - \frac{1}{-1} +$

$D = (-\infty, -1] \cup (1, +\infty)$

1) $y = \sqrt{\frac{x^r - 5x + 3}{x^m - 1}}$

$\frac{x^r - 5x + 3}{x^m - 1} \geq 0$
 $x^m - 1 \neq 0$
 $x^m \neq 1$
 $x \neq \pm 1$

$\frac{1^r}{-5} - \frac{3}{-1} +$

$f = [r, +\infty)$

1

$y = \sqrt{\frac{x^r - 5x + 3}{x^m - 1}}$

$f = 1R$

$x^r - 1 \neq 0 \Rightarrow x \neq \pm 1$

$D_f = R - \{ \pm 1 \}$

2) $y = \log(x^r - 3x)$

$x^r - 3x > 0$
 $x^r > 3x$
 $x > 3$

$f = (3, +\infty)$

1, 1, 4, 0

3) $y = \log \frac{14 - x^r}{12x - 2}$

$14 - x^r > 0$
 $14 > x^r$
 $x < \sqrt[3]{14}$

$12x - 2 > 0$
 $12x > 2$
 $x > \frac{1}{6}$

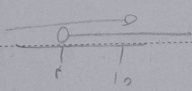
$f = (\frac{1}{6}, \sqrt[3]{14})$

4) $y = \log \frac{x^r - 5x + 12}{10 - x}$

$\frac{x^r - 5x + 12}{10 - x} \geq 0$

$\frac{(x-3)(x-4)}{10-x}$

$\frac{1^r}{-5} - \frac{3}{-1} +$



$f = (3, 4) \cup (10, \infty)$

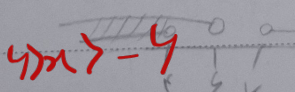
5) $y = \sqrt{x^r - 11x + 24} + \log \sqrt{34 - x^r}$

$\sqrt{x^r - 11x + 24} \geq 0$

$\frac{(x-3)(x-8)}{10-x} \geq 0$

$\log \sqrt{34 - x^r}$

$\sqrt{34 - x^r} > 0$
 $34 - x^r > 0$
 $34 > x^r$
 $x < \sqrt[3]{34}$



$f = (3, 8) \cup (10, \infty)$

$x > 0$

$x \neq 1$

$y = \frac{x^r - x}{x^r + x}$

$\frac{x(x-1)}{x(x+1)}$

$\frac{-1}{-5} - \frac{0}{-1} - \frac{1}{-1} +$

	-1	0	1	
x	-	-	0	+
$x-1$	-	-	-	0
$x+1$	-	0	+	+
y	-	+	0	+

0

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$$y = \frac{x - f(x)}{f(x)}$$

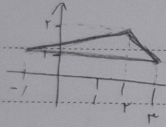
$$f(x) = x^r - 1$$

$$D_f = \left(-\infty, \frac{x^r - x - 1}{x^r - 1} \right]$$

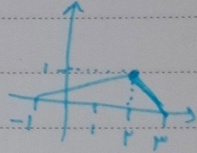
(0) 9

$$y = \frac{x - (x^r - 1)}{x^r - 1} \rightarrow y = \frac{-x^r + x + 1}{x^r - 1} \rightarrow \frac{-x^r + x + 1}{x^r - 1} \geq 0 \rightarrow \frac{x^r - x - 1}{x^r - 1} \leq 0$$

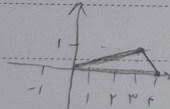
1) $f(x) + 1$



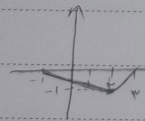
(2) 10



2) $f(x-1)$



3) $-f(x)$



4) $f(x+1) + 1$

