

نام و نام خانوادگی ... (محل امضا) ... پاسخنامه تشریحی تکلیف شماره ... کلاس ... (محل امضا) ...

$1) y = \frac{x+3}{2x^2+3x-1}$ $(x-1)(2x^2+3x-1)$ $\downarrow \quad \downarrow \quad \downarrow$ $x=1 \quad x=-3 \quad x=\frac{1}{2}$ $D_f = \mathbb{R} - \left\{ \frac{1}{2}, 1, -3 \right\}$	1
$2) y = \frac{x+c}{2x^2+3x+1}$ $(x-1)(2x^2+3x+1)$ $\downarrow \quad \downarrow \quad \downarrow$ $x=1 \quad x=-\frac{1}{2} \quad x=-3$ $D_f = \mathbb{R} - \left\{ -1, -\frac{1}{2}, -3 \right\}$	
$3) y = \frac{x+c}{x^2-2x+1}$ $(x-1)(x^2-2x+1)$ $x=1 \quad \Delta < 0$ $D_f = \mathbb{R} - \{1\}$	2
$4) y = \sqrt{\frac{x+c}{x^2-2x+1}}$ $\frac{-2 \pm 1}{1 \pm 2}$ $D_f = (-\infty, 1] \cup (1, +\infty)$	
$5) y = \frac{2}{x^2-5 x-1 -2x+5}$ $x > 1 \rightarrow x^2 - \sqrt{x+10} \rightarrow x=2, 0$ $x=1 \rightarrow x^2 - 2x+5 \rightarrow \Delta < 0$ $x < 1 \rightarrow x^2 + 3x \rightarrow x=0, -3$ $D_f = \mathbb{R} - \{-3, 0, 2, 5\}$	3
$6) y = \sqrt{-x-2} \quad [-x] \geq 2 \Rightarrow x \leq -2$	
$7) y = \frac{2x^2+7}{[x]^2-2[x]-3}$ $[x]^2-2[x]-3=0$ $[x]=-1 \quad [x]=3$ $D_f = \mathbb{R} - ([3, 4) \cup (-1, 0])$	4
$8) y = \sqrt{[x-\frac{1}{2}] + [x+\frac{2}{3}]}$ $[x-\frac{1}{2}] + [x+\frac{2}{3}] \geq 0 \Rightarrow [x+\frac{2}{3}-1] + [x+\frac{2}{3}] \geq 0$ $\Rightarrow x+\frac{2}{3} \geq 1 \Rightarrow x \geq \frac{1}{3} \rightarrow D_f$ $2[x+\frac{2}{3}]-1 \geq 0 \Rightarrow [x+\frac{2}{3}] \geq \frac{1}{2}$ $[x-\frac{1}{2}] + [-1(x-\frac{1}{2})] \begin{cases} x-\frac{1}{2} \in \mathbb{Z} \rightarrow y=0 \\ x-\frac{1}{2} \in \mathbb{Z} \rightarrow y=-1 \end{cases}$ $D_f = \left\{ x \mid x = k + \frac{1}{3}, k \in \mathbb{Z} \right\}$	5

$\text{a)} y = \frac{\cos x + 1}{\tan x + 1}$	$\left. \begin{aligned} \tan x \neq -1 &\Rightarrow x \neq \left\{ k\pi - \frac{\pi}{4} \right\} \\ \sin x \neq 0 &\Rightarrow x \neq \{ k\pi \} \\ \cos x \neq -1 &\Rightarrow x \neq \left\{ k\pi + \frac{\pi}{2} \right\} \end{aligned} \right\} D_f = \mathbb{R} - \left\{ k\pi, k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{2} \right\}$	
$\text{b)} y = \sqrt{1 - r \sin^2 x}$	$1 - r \sin^2 x \geq 0 \Rightarrow 1 \geq r \sin^2 x \Rightarrow \frac{1}{r} \geq \sin^2 x \Rightarrow \frac{1}{r} \leq \sin x \leq \frac{1}{r}$ $D_f = \left[k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4} \right]$	
$\text{a)} y = \sqrt{r \sin x - 1}$	$r \sin x \geq 1 \Rightarrow \sin x \geq \frac{1}{r} \Rightarrow D_f = \left[k\pi + \frac{\pi}{4}, k\pi + \frac{5\pi}{4} \right]$	✓
$\text{b)} y = \sqrt{1 - r \cos x}$	$1 \geq r \cos x \Rightarrow \frac{1}{r} \geq \cos x \Rightarrow D_f = \left[k\pi + \frac{\pi}{2}, k\pi - \frac{\pi}{2} \right]$	
$y = \arcsin(x^r + cx + 1)$	$\begin{aligned} -1 \leq x^r + cx + 1 &\leq 1 \\ -1 \leq x^r + cx + 1 &\rightarrow \frac{-r-1}{+1-r} \\ 0 \leq x^r + cx &\rightarrow \frac{-r}{+1-r} \end{aligned}$ $D_f = [-r, -1] \cup [-1, 0]$	Λ
$\cos y = \sqrt{0 - x}$	$\begin{aligned} 0 \leq \sqrt{0 - x} &\leq 1 \Rightarrow 0 \leq 0 - x \leq 1 \Rightarrow -1 \leq x \leq 0 \\ \Rightarrow r \leq x \leq 0 &\Rightarrow r \leq x \leq \frac{0}{r} \end{aligned}$ $D_f = \left[r, \frac{0}{r} \right]$	
$\text{a)} y = \log_r(1 - \log_r^x)$	$1 - \log_r^x > 0 \Rightarrow 1 > \log_r^x \Rightarrow r > x$	9
$\text{b)} y = \log_r(1 - \log_{\frac{1}{r}}^x)$	$1 - \log_{\frac{1}{r}}^x > 0 \Rightarrow 1 > \log_{\frac{1}{r}}^x \Rightarrow \frac{1}{r} < x$	
$\text{a)} y = \sqrt{r^{x-x^r}} - 1$	$\begin{aligned} r^{x-x^r} - 1 &\geq 0 \Rightarrow r^{x-x^r} \geq 1 \Rightarrow x - x^r \geq 0 \\ D_f &= [1, r] \end{aligned}$ $\frac{1}{-1} \frac{r}{+1} \leftarrow -x^r + x - c \geq 0$	1.
$\text{b)} y = \left(\frac{r^x + c}{r^x + f} \right)!$	$\frac{r^x + c}{r^x + f} \in \mathbb{N} \Rightarrow r^x + c = k(r^x + f) \Rightarrow r^x - r^x k = f - c$ $r^x(1 - k) = f - c$ $r^x = \frac{f - c}{1 - k}$ $D_f = \left\{ x \mid x = \frac{\log(f - c)}{\log(1 - k)}, k \in \mathbb{N} \right\}^{r > 1}$	