

(الف) $(a-r)m^2 + a + b \Rightarrow a-r=0$
 $\hookrightarrow \frac{a-r}{1} = 0$

$am+b=0 \Rightarrow a=-b$
 $\hookrightarrow 2(r)+b=0 \Rightarrow b=-4$

(۱) چون تابع دایره ای $[r, +\infty)$ تعریف نشده است

(۲) راصنه R هست پس باید $\Delta \geq 0$ باشد
 $f(m^2) - f \geq 0 \Leftrightarrow f - f(r-m^2)(1) \geq 0$
 $f(m+1)(m-1) \geq 0$
 $\hookrightarrow 1 \leq \frac{f}{f-1} = 2$ (تفاوت m)

(۳) $[n] + [n]$ اوجات دارد
 اگر $n \in \mathbb{Z} \Rightarrow 0$
 اگر $n \in \mathbb{Q} \Rightarrow -1$
 رست صفر، شش و دهم صورت
 $-2 \leq n \leq 2 \Leftrightarrow f \geq n^2$
 اعداد صحیح منگور در راصنه
 $\hookrightarrow$ اعداد ۰، ۱ و ۲
 $\hookrightarrow$ عدد ۳

(الف) $y = \sqrt{2x^3 + x^2} \Rightarrow \sqrt{x^2(2x+1)}$
 $\hookrightarrow x \geq -\frac{1}{2}$
 $\Rightarrow D_f = [-\frac{1}{2}, +\infty)$

(ب) $y = \sqrt{\frac{(x^2-1)(x^3-x^2)}{x^3-1}}$
 $\Rightarrow \sqrt{\frac{(x-1)(x+1)x^2(x-1)}{(x-1)(x^2+x+1)}}$
 $\hookrightarrow \Delta \geq 0$
 $D_f = (-\infty, -1] \cup \{0\} \cup [2, +\infty)$

(الف) $y = \sqrt{|x-2|-3} \Rightarrow |x-2| \geq 3$
 $\hookrightarrow x-2 \geq 3 \Rightarrow x \geq 5$
 $\hookrightarrow x-2 \leq -3 \Rightarrow x \leq -1$
 $\Rightarrow D_f = (-\infty, -1] \cup [5, +\infty)$

(ب) $y = \sqrt{f-|x-2|} \Rightarrow f \geq |x-2| \Rightarrow -f \leq x-2 \leq f$
 $-f+2 \leq x \leq f+2 \Rightarrow D_f = [-f+2, f+2]$
 $f \geq 2$

(الف) $y = \sqrt{1-|x|} \Rightarrow 1 \geq |x|$
 $\hookrightarrow -1 \leq x \leq 1$
 $D_f = [-1, 1]$

(ب) $\frac{1}{\sqrt{x^2-|x-a|}-1}$
 $\Rightarrow x \geq |x-a| \Rightarrow -x \leq x-a \leq x$
 $x \leq a \leq x$
 $\Rightarrow D_f = [x, a] - \{0\}$
 ولی
 $x - |x-a| \neq 1$
 $x - |x-a| = 1 \Rightarrow x = a+1$
 $x - |x-a| = -1 \Rightarrow x = a-1$

(الف) $y = \frac{\sin x - 1}{\cos x}$
 $\Rightarrow \cos x \neq 0$
 $\Rightarrow D_f = \mathbb{R} - \{k\pi + \frac{\pi}{2}\}$

(ب) $y = \frac{\cos x}{\sin x - 1}$
 $\Rightarrow \sin x - 1 \neq 0$
 $\Rightarrow D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{2}\}$

(الف) $y = \frac{x^2+x}{|x+1|-|x+3|}$
 $\Rightarrow |x+1| \neq |x+3|$
 $\Rightarrow x^2+x+1+x^2+3 \neq 0$
 $2x^2+4x+4 \neq 0$
 $x^2+2x+2 \neq 0$
 $\Rightarrow D_f = \mathbb{R} - \{-1 \pm \frac{\sqrt{3}}{2}\}$

(ب) $y = \sqrt{|x+1|-|x+3|}$
 $\Rightarrow |x+1|-|x+3| \geq 0$
 $x^2+x+1-x^2-3 \geq 0$
 $-2x-2 \geq 0 \Rightarrow x \leq -1$
 $\Rightarrow D_f = (-\infty, -1]$

(الف) $y = \sqrt{\log_{\frac{1}{2}}(x-1)}$
 $\Rightarrow \log_{\frac{1}{2}}(x-1) \geq 0$
 $\Rightarrow x-1 \leq 1$
 $x \leq 2$
 $\Rightarrow D_f = (1, 2]$

(الف) $\log_{10}(x \cos x + 1)$
 $\Rightarrow x \cos x + 1 > 0$
 $\Rightarrow \cos x > -\frac{1}{x}$
 $\Rightarrow D_f = \left(k\pi + \frac{\pi}{2}, k\pi + \frac{\pi}{2} + \frac{\pi}{x}\right) \cup \left(k\pi + \frac{\pi}{2} - \frac{\pi}{x}, k\pi + \frac{\pi}{2} - \frac{\pi}{x}\right)$

(ب) $y = \sqrt{\log_{\frac{1}{2}} \frac{x-1}{x+1}}$
 $\Rightarrow \log_{\frac{1}{2}} \frac{x-1}{x+1} \geq 0 \Rightarrow \frac{x-1}{x+1} \leq 1$
 $\Rightarrow x-1 \leq x+1$
 $\Rightarrow D_f = (-\infty, -1) \cup (1, +\infty)$