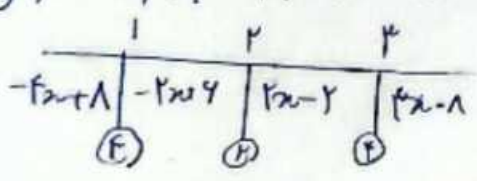
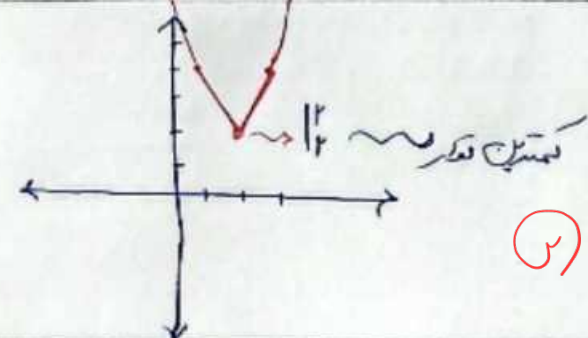


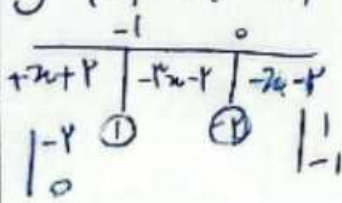
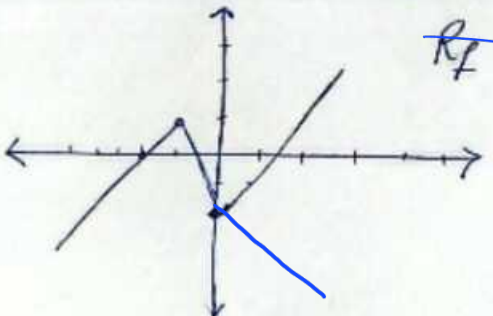
نام و نام خانوادگی: کلاس: شماره: پاسخنامه تشریحی تکلیف شماره ۱

$f(x) = \sqrt{1-x^2} \quad D_f = [-1, 1] \quad f = \{(-1, 0), (0, 1), (1, 0)\}$
 $g = \{(-1, 1), (0, 2), (1, 0)\}$
 $fg = \{(-1, 1), (0, 2), (1, 0)\}$
 $fg - cf = \{(-1, 1), (0, 2), (1, 0)\}$
 $1 + 0 + 1 = 11$

$f(x) = x - 1 \quad D_f = (0, +\infty) \rightsquigarrow R_f = [\infty, +\infty)$
 $g(x) = \frac{1}{x}x + 3 \quad D_g = (-\infty, \infty] \rightsquigarrow R_g = (-\infty, 4]$
 $R_f \cup R_g = (-\infty, 4] \cup [\infty, +\infty)$

$y = \frac{-x^2}{4} + x + 3$
 $\frac{-x^2}{4} + x + 3 > \frac{c}{4}$
 $\frac{-x^2}{4} + x + \frac{c}{4} > 0$
 $\frac{-x^2 + 4x + c}{4} > 0$
 $-(x+1)(x-3) > 0$
 $\sqrt{b-a} = \sqrt{c} = 2$
 $D_f = (-1, 3)$

$y = |x-1| + |x-2| + |x-3|$



$y = |x| - 2|x+1|$


 $R_f = \mathbb{R}$
 $R = (-\infty, 1]$

$$y = \frac{x^2 + \omega x + m}{x+1} \rightarrow yx + y = x^2 + \omega x + m \Rightarrow x^2 + (\omega - y)x + (m - y) = 0$$

$$a > 0 \quad \Delta \geq 0$$

$$y = \frac{\omega - y}{2} \pm \sqrt{\left(\frac{\omega - y}{2}\right)^2 - (m - y)} \rightarrow y^2 + \omega y - 10y - km + ky \geq 0$$

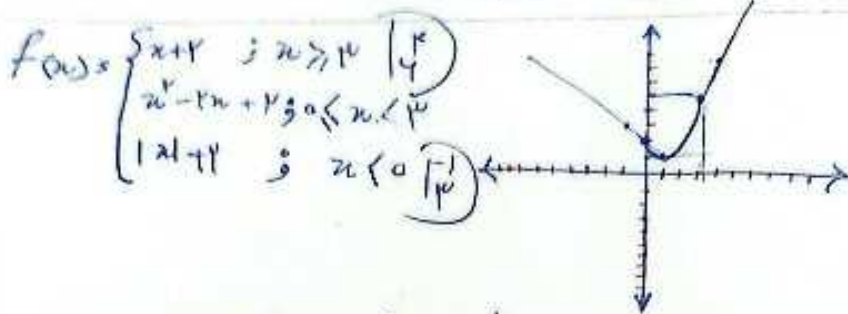
$m \in \{1, 2, 3\}$

$$y^2 - 9y + \omega y - km \geq 0$$

$a > 0 \quad \Delta < 0$

$$\Delta = 81 - 100 + 14m < 0$$

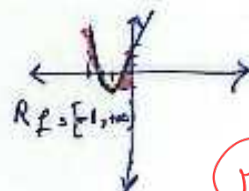
$$14m < 19 \quad m < \frac{19}{14}$$



$$R_f = [1, +\infty)$$

$$f(x) = \begin{cases} x^2 + 1 & x \leq 0 \\ x^2 - 2x + 1 & 0 < x < 1 \\ 1 + x & x \geq 1 \end{cases}$$

$R_f' = [-1, 0]$



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

$$y = a + 1 - \sqrt{1+x}$$

$$R_f = [a, +\infty)$$

$$1) f \Rightarrow 1+x \geq 0$$

$$x \geq -1$$

$$y_{\min} = a$$

$$b = \frac{1}{2}$$

$$a = a + 1 - \frac{1}{2} \quad a \leq \frac{1}{2}$$

$$ab = \left(\frac{1}{2}\right)\left(\frac{1}{2}\right) = \frac{1}{4}$$

$$f(x) + g(x) = \sqrt{1+x} + \sqrt{1-x} = \sqrt{(1+x)(1-x)} = \sqrt{1-x^2}$$

$$f(x) = \sqrt{1+x} + \sqrt{1-x}$$

$$D_f = D_g$$

$$g(x) = \sqrt{1-x} + \sqrt{1+x} - \sqrt{1+x} - \sqrt{1-x} = \sqrt{1+x} - \sqrt{1-x}$$

$$D_f = D_g = [-1, 1] \quad y = \frac{f(x) - g(x)}{2} = \frac{\sqrt{1+x} + \sqrt{1-x} - \sqrt{1+x} + \sqrt{1-x}}{2} = \sqrt{1-x}$$

$$\frac{\sqrt{1+x}}{2} \rightarrow x=1 \quad \frac{1}{2} = \frac{1}{2}$$

$$R_f = [0, \sqrt{2}]$$