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سؤال (١) بارك

$x^p + pa = a^p - k \Rightarrow pa = -k \Rightarrow a = -\frac{k}{p}$  ← سؤال (١) بارك

$g(x) = k + b = k \Rightarrow b = 0$       $f(x) = \frac{x^p + a}{x^p + 1} = \frac{k + a}{1} = k \Rightarrow k + a = k \Rightarrow a = 0$      سؤال (٢) بارك

$f(1) = \frac{1 + 1}{1 + 1} = \frac{1}{1} = k$

سؤال (٣) بارك

$$\begin{cases} p - a + b = 0 \\ 3p + ka + b = 0 \end{cases} \Rightarrow \begin{cases} 3p + ka + b = p - a + b \\ 2a = -2p \Rightarrow a = -p, b = -p \end{cases}$$

$f(x) = \frac{k + 1}{x + (-p) + (-p)} = \frac{k + 1}{x - 2p} = -\frac{k + 1}{2p}$

سؤال (٤) بارك

$-kx^p + ax + b = 0 \Rightarrow kx^p - ax - b = 0$

$(kx + p)^p = 0 \Rightarrow kx^p + px + \dots = 0 \Rightarrow (a = -p) \text{ and } (b = -\frac{1}{k})$

$a + b = -p - \frac{1}{k}$

سؤال (٥) بارك

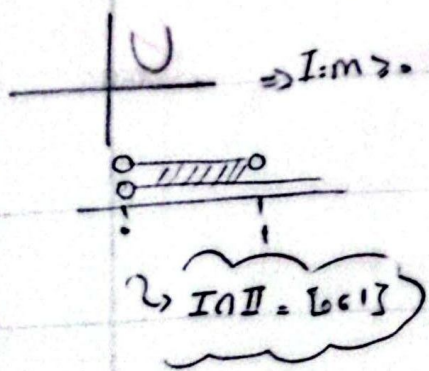
$\Delta < 0 \Rightarrow x^p + mx + 1 \Rightarrow m^p - k(1)(1) < 0 \Rightarrow m^p - k < 0 \Rightarrow m^p < k$   
 •  $m = -2$  ← سؤال (٦) بارك

$I = x^p > 0 \Rightarrow x > 0$

$II = k - \frac{1}{x^p} > 0 \Rightarrow k > \frac{1}{x^p} \Rightarrow x^p > \frac{1}{k} \Rightarrow -\frac{1}{k} > x > \frac{1}{k}$

$I \cap II = (-\infty, -\frac{1}{k}] \cup [\frac{1}{k}, +\infty)$

سؤال (٧) بارك



$I = \Delta < 0 \Rightarrow f(m^p - \frac{1}{k})(1) < 0 \Rightarrow f(m^p - \frac{1}{k}) < 0$   
 $f(m^p - \frac{1}{k}) < 0 \Rightarrow \frac{1}{p-1} > 0 \Rightarrow [0, 1]$

$$\frac{(10x+1)(10x-1)}{(10x-1)} \Rightarrow a = \frac{1}{10}$$

سؤال ٨  
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$$g\left(\frac{1}{10}\right) = 1 \times \frac{1}{10} + 1 \cdot 1 \Rightarrow f\left(\frac{1}{10}\right) + k = 1 \Rightarrow k = 0$$

$$a+k = \frac{1}{10}$$

$$\frac{(10x+1)(10x-1)}{10x+1}$$

$$\left\{ \begin{aligned} 10\left(\frac{-1}{10}\right)a + 1 &= -1 \Rightarrow a = 10 \\ f\left(\frac{-1}{10}\right) = g\left(\frac{-1}{10}\right) &\Rightarrow 10a - 1 = 10x + b \\ &\Rightarrow b = -1 \end{aligned} \right.$$

سؤال ٩  
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$$g(x) = f \Rightarrow 10a^x + 10a = f \Rightarrow a^x + a = 1$$

سؤال ١٠

$$a^x + a - 1 = 0 \Rightarrow (a+1)(a-1) = 0 \Rightarrow \text{إما } a = 1 \text{ أو } a = -1$$

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