

$$\tan\left(\frac{\pi}{4}\right) = 1$$

$$\tan\left(\frac{\pi}{4}\right) = \cot \frac{\pi}{4} = \cot \frac{\pi}{4} = 1$$

$$\frac{\pi}{4} \leq 1$$

$$\tan\left(\frac{\pi}{4}\right) = \sqrt{(\frac{\pi}{4})^2 + 1} = 1$$

$$\frac{\pi}{4} = 1/4 > 1$$

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$$\tan\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}$$

$$\tan\left(\frac{\pi}{4}\right) = 2 \cos^2 \frac{\pi}{4} = 2 \left(\frac{1}{2}\right)^2 = \frac{1}{2}$$

$$\frac{1}{2} = \frac{1}{x} \rightarrow x = 2 \rightarrow \tan\left(\frac{1}{x}\right) = \sqrt{\frac{x(x)-1}{x^2}} = \sqrt{\frac{2-1}{4}} = \frac{\sqrt{2}}{2}$$

$$\tan\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}$$

$$\tan\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{1-\sqrt{2}} \times \frac{1+\sqrt{2}}{1+\sqrt{2}} = \frac{\sqrt{2}+2}{-1} = -\sqrt{2}-2$$

$$\tan\left(\frac{\pi}{4}\right) = [-2-\sqrt{2}] = -3$$

$$\sqrt{2} = 1.4 \rightarrow -2-\sqrt{2} = -3.4$$

$$[-3.4] = -4$$

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

$$\tan\left(\frac{\pi}{4}\right) = \sin \frac{\pi}{4} = \frac{\sqrt{2}}{2}$$

$$\tan\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2} \sqrt{1 - \left(\frac{\sqrt{2}}{2}\right)^2} = \frac{\sqrt{2}}{2} \sqrt{1 - \frac{1}{2}} = \frac{\sqrt{2}}{2} \times \frac{1}{\sqrt{2}} = \frac{1}{2}$$

$$\tan\left(\frac{\pi}{4}\right) = \{(4,5), (2,5), (6,12), (8,12)\}$$

$$\tan\left(\frac{\pi}{4}\right) = \emptyset$$

الف)

$$4 \rightarrow 5 \rightarrow 5$$

$$2 \rightarrow 5 \rightarrow 5$$

$$6 \rightarrow 12 \rightarrow 12$$

$$8 \rightarrow 12 \rightarrow 12$$

$$4 \rightarrow 5 \rightarrow X$$

$$2 \rightarrow 5 \rightarrow X$$

$$6 \rightarrow 12 \rightarrow X$$

$$8 \rightarrow 12 \rightarrow X$$

$$ج) 4 \rightarrow 5 \rightarrow X$$

$$2 \rightarrow 5 \rightarrow X$$

$$6 \rightarrow 12 \rightarrow X$$

$$8 \rightarrow 12 \rightarrow X$$

$$د) 4 \rightarrow 6 \rightarrow 8$$

$$2 \rightarrow 6 \rightarrow 6$$

$$6 \rightarrow 8 \rightarrow 10$$

$$8 \rightarrow 10 \rightarrow X$$

$$ج) \tan\left(\frac{\pi}{4}\right) = \emptyset$$

$$د) \tan\left(\frac{\pi}{4}\right) = \{(4,8), (2,6), (6,10)\}$$

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$$(4,2) \in f \circ g$$

$$(4,1) \in g \circ f$$

$$f \circ g = \{(1,1), (2,2), (3,7), (4,7)\}$$

$$g \circ f = \{(2,2), (3,3), (4,1)\}$$

$$(a,b) = (4,5)$$

$$1 \rightarrow 2 \rightarrow 1$$

$$2 \rightarrow 1 \rightarrow 1$$

$$a \rightarrow 2 \rightarrow 2$$

$$b \rightarrow 1 \rightarrow 1$$

$$(4,2)$$

$$a = 4$$

$$2 \rightarrow 1 \rightarrow 2$$

$$3 \rightarrow 2 \rightarrow 3$$

$$4 \rightarrow 5 \rightarrow ?$$

$$1 \rightarrow 7 \rightarrow ?$$

این مجموعه
مستقیم است
از آن بابتی

$b = 5$ پس $f \circ g$ راضی است

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$f(x) = ax + b$ $f(f(x)) = f(ax+b) = a(ax+b) + b = a^2x + ab + b$ $f(x) = x \rightarrow ax+b = x \rightarrow a = 1, b = 0$ $f(x) = -x \rightarrow ax+b = -x \rightarrow a = -1, b = 0$ $f(x) = x+1 \rightarrow ax+b = x+1 \rightarrow a = 1, b = 1$ $f(x) = -x-1 \rightarrow ax+b = -x-1 \rightarrow a = -1, b = -1$ $f(-1) = 1 \rightarrow a(-1) + b = 1 \rightarrow -a + b = 1$ $f(1) = -1 \rightarrow a(1) + b = -1 \rightarrow a + b = -1$ $a = 1, b = 0$ $a = -1, b = 0$ $a = 1, b = 1$ $a = -1, b = -1$	6
$M = g \circ f : D_f \rightarrow D_g$ $D_f = \{x \mid f(x) \in D_g\}$ $D_g = \{x \mid x(x-1) \neq 0\} = \mathbb{R} \setminus \{0, 1\}$ $D_f = \{x \mid x+ x \geq 0\} = \mathbb{R}$ $M = g \circ f : \mathbb{R} \rightarrow \mathbb{R} \setminus \{0, 1\}$	7 $\mathbb{R} \setminus \{1\}$
$f+g : \sqrt{x} + \sqrt{1-x} \rightarrow M = (f+g) \circ f = \sqrt{f(x)} + \sqrt{1-f(x)}$ $D_f = \{x \mid x \in D_f, f(x) \in D_{f+g}\}$ $D_{f+g} = \{x \mid 1-x \geq 0\} = [0, 1]$ $D_f = \{x \mid x \geq 0\} = [0, \infty)$ $M = (f+g) \circ f : [0, 1] \rightarrow [0, 1]$	8
$f(x) = \frac{x+1}{x-1} \rightarrow f(t) = \frac{t+1}{t-1} + \omega$ $\frac{t+1}{t-1} = t \rightarrow t = \frac{t+1}{t-1} \rightarrow t(t-1) = t+1 \rightarrow t^2 - 2t - 1 = 0$ $t = 1 \pm \sqrt{2}$ $f(x) = \frac{1}{x-1}$ $x + \frac{1}{x} = t \rightarrow t(x-1) = 1 + \frac{1}{x} \rightarrow t(x-1) = \frac{x+1}{x} \rightarrow t(x-1)x = x+1 \rightarrow tx^2 - tx = x+1 \rightarrow tx^2 - (t+1)x - 1 = 0$ $t = \frac{1}{x-1} \rightarrow f(t) = \frac{1}{\frac{1}{x-1}-1} = \frac{x-1}{1-x+1} = \frac{x-1}{2-x}$	9
$g(f(x)) = 0 \rightarrow f(x) = 1 \rightarrow x\sqrt{x} = 1 \rightarrow x^2 = 1 \rightarrow x = 1$ $f(x) = x\sqrt{x} \rightarrow x\sqrt{x} = 1 \rightarrow x^2 = 1 \rightarrow x = 1$	10