

نام و نام خانوادگی کجا پاسخنامه تشریحی تکلیف شماره ۲۰ کلاس ۲۰۰۰ افزودن!

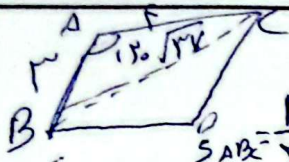
الف) $\left(\frac{\sqrt{2}}{2} + \left(-\frac{\sqrt{3}}{2}\right)\right) \left(\frac{\sqrt{2}}{2} + \frac{\sqrt{3}}{2}\right)$
 $\frac{\sqrt{2}-\sqrt{3}}{2} \times \frac{\sqrt{2}+\sqrt{3}}{2} = \frac{2-3}{4} = -\frac{1}{4}$ ✓
 $\frac{1+3\left(\frac{1}{4}\right)}{4\left(\frac{3}{4}\right)+2\left(\frac{1}{4}\right)} = \frac{1+1}{3+1} = \frac{2}{4} = \frac{1}{2}$ ✓
 $\cos\left(\frac{\pi}{4}+\frac{\pi}{3}\right) = \cos\left(\frac{5\pi}{12}\right) = \sin\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}$ ✓
 $\cos 150^\circ = -\frac{\sqrt{3}}{2}$

$\triangle ABC$ with $\angle C = 90^\circ$, $AC = 3$, $BC = 4$, $AB = 5$.
 $\sin C = \frac{AB}{AC} = \frac{5}{3}$ ✓
 $\frac{\sqrt{12}}{\frac{\sqrt{2}}{2}} = \frac{\sqrt{6}}{\sin C} \Rightarrow \frac{2\sqrt{12}}{\sqrt{2}} = \frac{\sqrt{6}}{\sin C}$
 $\frac{4\sqrt{3}}{1} = \frac{\sqrt{6}}{\sin C} \Rightarrow \sin C = \frac{\sqrt{6}}{4\sqrt{3}} = \frac{\sqrt{2}}{2}$ ✓
 $\angle C = 30^\circ$
 $\cos 30^\circ = \frac{AC}{AB} = \frac{3}{5}$ ✓
 $AC = \frac{11}{\sqrt{2}} = \frac{11\sqrt{2}}{2}$
 $\frac{2\sqrt{6}}{\frac{1}{2}} = \frac{2\sqrt{3}}{\sin B} \Rightarrow \sin B = \frac{2\sqrt{3}}{4\sqrt{6}} = \frac{1}{2}$ ✓
 $\angle B = 30^\circ$

$\triangle ABC$ with $\angle C = 90^\circ$, $AC = 3$, $BC = 4$, $AB = 5$.
 $\tan 40^\circ = \frac{AC}{BC} = \frac{3}{4} \Rightarrow BC = 4$
 $\tan 50^\circ = \frac{1}{\sqrt{2}} = \frac{AC}{BC} \Rightarrow AC = \frac{BC}{\sqrt{2}}$
 $AC + BC = 11 \Rightarrow \frac{BC}{\sqrt{2}} + BC = 11$
 $BC \left(\frac{1}{\sqrt{2}} + 1\right) = 11 \Rightarrow BC = \frac{11\sqrt{2}}{1+\sqrt{2}}$
 $AC = \frac{11}{1+\sqrt{2}}$ ✓
 $\sin A = \frac{BC}{AB} = \frac{4}{5}$ ✓
 $\cot 40^\circ = \frac{1}{\sqrt{2}} = \frac{BC}{AC} \Rightarrow BC = \frac{AC}{\sqrt{2}}$
 $1 + \frac{1}{\sqrt{2}} = \frac{11}{AC} \Rightarrow AC = \frac{11}{1+\frac{1}{\sqrt{2}}} = \frac{11\sqrt{2}}{1+\sqrt{2}}$ ✓
 $\sin A = \frac{1}{\sqrt{13}} = \frac{\sqrt{13}}{13}$ ✓

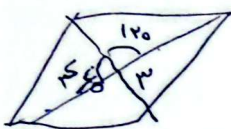
$\triangle ABC$ with $\angle C = 90^\circ$, $AC = 1$, $BC = 1$, $AB = \sqrt{2}$.
 $\cos 30^\circ = \frac{AC}{AB} = \frac{1}{\sqrt{2}} \Rightarrow AB = \frac{1}{\cos 30^\circ} = \frac{2}{\sqrt{3}}$
 $\frac{AB}{AC} = \frac{\frac{2}{\sqrt{3}}}{1} = \frac{2}{\sqrt{3}} = \frac{\sqrt{3}+1}{\sqrt{2}}$ ✓
 $\frac{AB}{AC} = \frac{\frac{2}{\sqrt{3}}}{\frac{1}{\sqrt{2}}} = \frac{2\sqrt{2}}{\sqrt{3}} = \frac{\sqrt{6}+1}{2}$ ✓

$\triangle ABE$ and $\triangle BCD$ are similar triangles.
 $\frac{S_{ABE}}{S_{BCD}} = \frac{\frac{1}{2} \times 2 \times 4 \times \sin B}{\frac{1}{2} \times 4 \times 2 \times \sin B} = \frac{1}{1} = \frac{4}{9}$ ✓

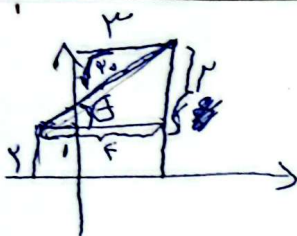


$$S_{ABC} = \frac{1}{2} \times 12 \times 5 \sin 120^\circ = \frac{1}{2} \times 12 \times \frac{5\sqrt{3}}{2} = 15\sqrt{3}$$

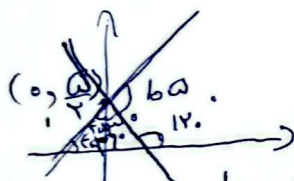
$$S_{ABC} = S_{BCD} \Rightarrow S_{ABCD} = 2 \times 15\sqrt{3} = 30\sqrt{3} \checkmark$$



$$\frac{1}{2} \times 12 \times 5 \sin 60^\circ = \frac{1}{2} \times 12 \times \frac{5\sqrt{3}}{2} = 15\sqrt{3} \checkmark$$



$$\cos \theta = \frac{F}{Y_0} = \frac{F\sqrt{a}}{Y_0} = \frac{\sqrt{a}}{a} = \frac{1}{\sqrt{a}} \checkmark$$



$$b = a$$

$$m = \tan 135^\circ = -1$$

$$y = -x + a$$

$$mb = -a \checkmark$$

$$f\left(\frac{a\pi}{9}\right) = \cos\left(\pi + \frac{a\pi}{9}\right) + \sin\left(\frac{\pi}{9} - \frac{a\pi}{9}\right) - \tan\left(\frac{\pi}{9} + \frac{a\pi}{9}\right)$$

$$= \cos\left(\frac{\pi}{9} + \frac{\pi}{9}\right) + \sin\left(-\frac{\pi}{9} - \frac{\pi}{9}\right) - \tan\left(\frac{1\pi}{9} - \frac{\pi}{9} + \frac{\pi}{9} - \frac{\pi}{9}\right)$$

$$\sin\left(\frac{\pi}{9}\right) + \sin\left(-\frac{\pi}{9}\right) - \tan\left(\frac{\pi}{9}\right) = -\sqrt{3} \checkmark$$

$$\frac{\sin\left(\pi + \frac{\pi}{9} + x\right) + \cos\left(\pi + \frac{\pi}{9} - x\right)}{\cos(\pi + x) - \sin(-x)} = \frac{\sin\left(\frac{\pi}{9} + x\right) + \cos\left(\frac{\pi}{9} - x\right)}{\cos(\pi + x) + \sin(x)}$$

$$\frac{\cos(x) - \sin(x)}{-\cos(x) + \sin(x)} = \frac{\cos(x) - \sin(x)}{-(\cos(x) - \sin(x))} = -1 \checkmark$$