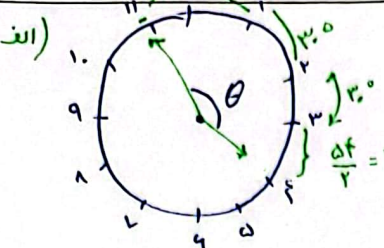
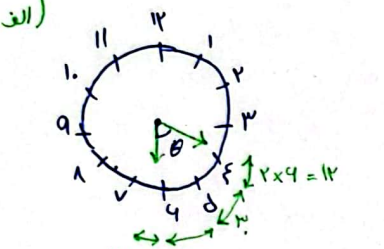
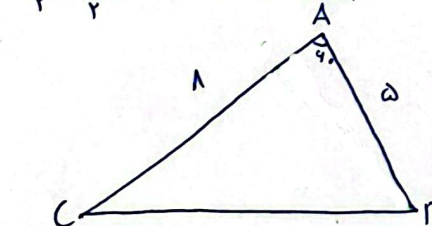
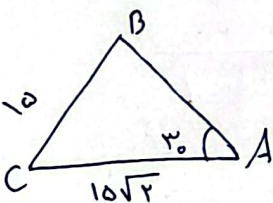


نام و نام خانوادگی: کلاس: ۱۹ پاسخنامه تشریحی تکلیف شماره ۱۹ الف)  $\theta = 9 + (4 \times 3) + 2.7 = 15.7^\circ$ ✓	ب) $\alpha = 5.5m - 3.0h$, 3.54 $\Rightarrow (5.5 \times 54) - (3.0 \times 3)$ $= 297 - 9 = 288$, $\alpha + \theta = 34.0$ $\Rightarrow \theta = 34.0 - 288 = 153^\circ$ ✓	(۲)	۱
الف)  $\theta = 9 + (2 \times 3) + 1.2 = 11.2^\circ$ ✓	ب) $\theta = 5.5m - 3.0h$, 4.18 $\Rightarrow \theta = 3.0h - 5.5m \Rightarrow (3.0 \times 4) - (5.5 \times 1)$ $= 12 - 5.5 = 6.5^\circ$ ✓	(۲)	۲
الف) $S_{AOB} = \frac{\alpha}{r} \times R^2$ $\Rightarrow \frac{\pi}{4} \times 3^2 = \frac{\pi}{4} \times 9$ $= 3.75$ ✓	ب) $P_{OAB} = 2R + R\alpha$ $\Rightarrow 2 \times 3 + 3 \times \frac{\pi}{4} = 6 + \frac{\pi}{4}$ ✓ $= \frac{12 + \pi}{4}$	(۱.۷۵)	۳
الف) $S_{ASB} = \frac{1}{2} \times \sin A \times CA \times AB$ $= \frac{1}{2} \times \frac{\sqrt{3}}{2} \times 8 \times 5 = 10\sqrt{3}$ ✓ 	ب) $CB = \sqrt{5^2 + 8^2 - 2 \times 5 \times 8 \times \cos 60^\circ}$ $= \sqrt{25 + 64 - 40} = \sqrt{49} = 7$ ✓ $\Rightarrow P_{ACB} = 5 + 8 + 7 = 20$ ✓	(۲)	۴
	$180 - 150 = 30 \rightarrow A$ $\frac{10}{\sin 30^\circ} = \frac{10\sqrt{2}}{r}$ $B = \frac{10\sqrt{2}}{r} \times \frac{1}{10} = \frac{\sqrt{2}}{r} \Rightarrow B = 45^\circ \Rightarrow C = 105^\circ$ $105 \times \frac{\pi}{180} = \frac{105\pi}{180} = \frac{7\pi}{12}$ ✓	(۱.۷۵)	۵

$$\frac{\tan(\pi - \alpha) + r \tan(\pi + \alpha)}{\tan(r\pi - \alpha) - \tan(r\pi + \alpha)} = \frac{-\tan \alpha + r \tan \alpha}{-\tan \alpha - \tan \alpha} = \frac{r \tan \alpha}{-r \tan \alpha} \quad (r)$$

$$= -1 \quad \checkmark$$

$$\frac{r \tan 45^\circ + \tan 15^\circ}{r \tan 145^\circ - \tan 155^\circ} = \frac{r \cot 15^\circ + (-\cot 15^\circ)}{-r \tan 15^\circ - (+\cot 15^\circ)} = \frac{\cot 15^\circ}{\cot 15^\circ - r \tan 15^\circ}$$

نصائح: $\tan 15^\circ = a$, $\cot \alpha = \frac{1}{\tan \alpha}$

$$\frac{\frac{1}{a}}{\frac{1}{a} - r a} = \frac{\frac{1}{a}}{\frac{1 - r a^2}{a}} = \frac{1}{1 - r a^2}$$

$\tan 45^\circ = \cot 15^\circ$ $\tan 145^\circ = \cot(-15^\circ) = -\cot 15^\circ$ $\tan 155^\circ = -\tan 15^\circ$ $\tan 15^\circ = a$
 $15^\circ + 45^\circ = 90^\circ$ $15^\circ + (-15^\circ) = 90^\circ$ $145^\circ + 15^\circ = 180^\circ$ $\tan(r\frac{\pi}{4} - \frac{\pi}{12}) = -\cot \frac{\pi}{12} = -\cot 15^\circ$ $\frac{\frac{\pi}{12}}{\frac{\pi}{4}} = \frac{1}{3}$

$$\frac{\sin \theta + \cos \theta}{\sin \theta - \cos \theta} + \frac{\sin \theta - \cos \theta}{\sin \theta + \cos \theta} = \frac{\sin^2 \theta + \cos^2 \theta + r \sin \theta \cos \theta + \sin^2 \theta + \cos^2 \theta - r \sin \theta \cos \theta}{\sin^2 \theta - \cos^2 \theta}$$

$$= \frac{r \sin^2 \theta + r \cos^2 \theta}{\sin^2 \theta - (1 - \sin^2 \theta)} = \frac{r \sin^2 \theta + r - r \sin^2 \theta}{\sin^2 \theta - 1 + \sin^2 \theta} = \frac{r}{r \sin^2 \theta - 1} = r$$

$\Rightarrow r \sin^2 \theta - r = r \Rightarrow r \sin^2 \theta = 2r \Rightarrow \sin^2 \theta = \frac{2}{r}$ $\sin^2 \theta + \cos^2 \theta = 1 \Rightarrow \cos^2 \theta = 1 - \frac{2}{r} = \frac{r-2}{r}$
 $\Rightarrow \tan^2 \theta = \frac{\sin^2 \theta}{\cos^2 \theta} = \frac{\frac{2}{r}}{\frac{r-2}{r}} = \frac{2}{r-2} = 2 \quad \checkmark$

$$\frac{\sin^2 \theta - r \cos^2 \theta + 1}{\sin^2 \theta + r \cos^2 \theta - 1} = \frac{\sin^2 \theta - r(1 - \sin^2 \theta) + 1}{\sin^2 \theta + r(1 - \sin^2 \theta) - 1} = \frac{\sin^2 \theta - r + r \sin^2 \theta + 1}{\sin^2 \theta + r - r \sin^2 \theta - 1}$$

$$= \frac{r \sin^2 \theta - 1}{1 - \sin^2 \theta} = f \Rightarrow f - f \sin^2 \theta = r \sin^2 \theta - 1 \Rightarrow r \sin^2 \theta = \frac{2}{r}$$

$\Rightarrow \tan^2 \theta = \frac{\sin^2 \theta}{\cos^2 \theta} = \frac{\frac{2}{r}}{\frac{r-2}{r}} = \frac{2}{r-2} = 2 \quad \checkmark$

الف) $\cos(r, d) \Rightarrow \cos^2(r, d) = \frac{1 + \cos(r \times r, d)}{2} = \frac{1 + \frac{\sqrt{r}}{r}}{2}$

$$= \frac{\frac{r + \sqrt{r}}{r}}{2} = \frac{r + \sqrt{r}}{2r} \Rightarrow \cos(r, d) = \sqrt{\frac{r + \sqrt{r}}{2r}} = \frac{\sqrt{r + \sqrt{r}}}{\sqrt{2r}} = \frac{\sqrt{r + \sqrt{r}}}{\sqrt{2} \sqrt{r}} \quad \checkmark$$

ب) $\sin(4v, d) \Rightarrow \sin^2(4v, d) = \frac{1 - \cos(4v, d \times v)}{2} = \frac{1 - \frac{\sqrt{v}}{v}}{2} = \frac{1 - \frac{1}{\sqrt{v}}}{2}$

$$= \frac{v - \sqrt{v}}{2v} \Rightarrow \sin(4v, d) = \sqrt{\frac{v - \sqrt{v}}{2v}} = \frac{\sqrt{v - \sqrt{v}}}{\sqrt{2v}} = \frac{\sqrt{v - \sqrt{v}}}{\sqrt{2} \sqrt{v}} \quad \checkmark$$