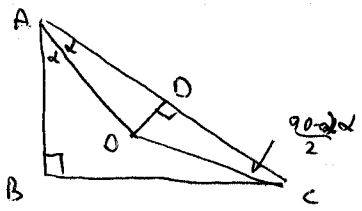
5.



משפט הסינוסים ל $\triangle AOC$:

$$\frac{AC}{\sin(180-\alpha-\frac{90-2\alpha}{2})} = \frac{AO}{\sin(\frac{90-2\alpha}{2})}$$

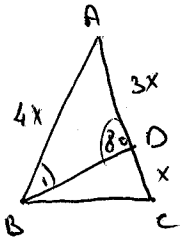
$$AO = \frac{\sin(45-\alpha)\cdot b}{\sin(45)}$$

$\triangle AOD$:

$$\frac{DO}{AO} = \sin\alpha$$

$$DO = \frac{\sin\alpha\cdot\sin(45-\frac{\alpha}{2})\,b}{\sin(45)}$$

9.



א. משפט הסינוסים ל $\triangle ABD$:

$$\frac{4x}{\sin 80} = \frac{3x}{\sin\angle B_1} \quad /:x$$

$$\frac{4}{\sin 80} = \frac{3}{\sin\angle B_1} \Rightarrow \angle B_1 = 47.61$$

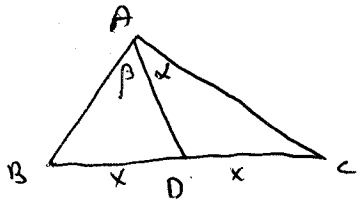
לכן $\angle A = 180 - 47.61 - 80 = 52.39$

ב. משפט הסינוסים ל $\triangle ABD$:

$$\frac{AB}{\sin 80} = \frac{BD}{\sin 52.39}$$

$$\frac{AB}{BD} = \frac{\sin 80}{\sin 52.39} = 1.24$$

13.



משפט הסינוסים ל $\triangle ADC$:

$$\frac{x}{\sin\alpha} = \frac{AD}{\sin\angle C} \qquad \sin\angle C = \frac{AD\sin\alpha}{x}$$

משפט הסינוסים ל $\triangle ABD$:

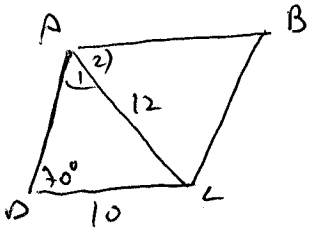
$$\frac{x}{\sin\beta} = \frac{AD}{\sin\angle B} \qquad \sin\angle B = \frac{AD\sin\beta}{x}$$

משפט הסינוסים ל $\triangle ABC$

$$\frac{AB}{\sin\angle C} = \frac{AC}{\sin\angle B}$$

$$\frac{AB}{AC} = \frac{\sin\angle C}{\sin\angle B} = \frac{\frac{AD\sin\alpha}{x}}{\frac{AD\sin\beta}{x}} = \frac{\sin\alpha}{\sin\beta}$$

16.



משפט הסינוסים ל $\triangle ACD$:

$$\frac{12}{\sin 70} = \frac{10}{\sin\angle A_1}$$

$$\angle A_1 = 51.54$$

$$\angle ACD = 180 - 70 - 51.54 = 58.46$$

$$\frac{AD}{\sin 58.46} = \frac{12}{\sin 70} \Rightarrow AD = 10.88$$

$\angle A = 110° \Rightarrow \angle A_2 = 58.46$ (משלים את $\angle D$ ל-180°) $\Rightarrow \angle B = 180 - 58.46 - 58.46 = 63.08$

כל הזכויות שמורות ל http://heshbonia.com/

$$\frac{12}{\sin 63.08} = \frac{CB}{\sin 58.46} \Rightarrow CB = 11.5 \qquad \frac{12}{\sin 63.09} = \frac{AB}{\sin 58.46} \Rightarrow AB = 11.5$$

היקף המרובע $= 11.5 + 11.5 + 10 + 10.88 = 43.88$