L2 Rezolvarea triunghiului dreptunghic (pagina 211)

1. **a)** $\sphericalangle C = 30^\circ$, $AC = 4\sqrt{3}$ cm, $BC = 8$ cm.

b) $AB = 16$ cm, $BC = 20$ cm, $\operatorname{tg} B = \frac{3}{4}$.

c) $\sin B = \frac{1}{3}$, $h = \frac{3\sqrt{10}}{10}$ cm.

2. $AC = 9\sqrt{5}$ cm, $AB = 18\sqrt{5}$ cm, $\sin B = \frac{\sqrt{5}}{5}$.

3. **a)** $AB = BC = 12$ cm, $\sphericalangle A = \sphericalangle C = 45^\circ$, $h = 6\sqrt{2}$ cm.

b) $BC = \frac{8\sqrt{3}}{3}$ cm, $AC = \frac{16\sqrt{3}}{3}$ cm, $\sphericalangle A = 30^\circ$, $\sphericalangle C = 60^\circ$, $h = 4$ cm;

c) $AB = 2$ cm, $AC = 4$ cm, $\sphericalangle A = 60^\circ$, $\sphericalangle C = 30^\circ$, $h = \sqrt{3}$ cm.

4. **a)** $\sphericalangle AMD = (90 - u)^\circ$, $\sphericalangle CMN = u^\circ$. Deoarece $\sphericalangle DMC = 180^\circ$, rezultă $\sphericalangle AMN = 90^\circ$.

b) Din ΔADM, se obține $AM = 2\sqrt{3}$ cm, $AD = 3$ cm, iar din ΔCMN, $MN = 2$ cm.

$$\frac{\mathscr{A}_{AMN}}{\mathscr{A}_{ABCD}} = \frac{\frac{1}{2}\cdot AM \cdot MN}{AB \cdot AD} = \frac{1}{2}.$$

5. **a)** $FM = 3$ cm. **b)** $\mathscr{P}_{FME} = 3\cdot(1 + \sqrt{3})$ cm. **c)** $DE = (3 + \sqrt{3})$ cm. $(3 + \sqrt{3}) > 3 + 1{,}7$, deci $DE > 4{,}7$ cm.

6. $AC^2 + BC^2 = AB^2$, deci $\sphericalangle ACB = 90^\circ$. Atunci, $AP = PC = BP$ și $\sphericalangle ACP = \sphericalangle A$, $\sphericalangle BCP = \sphericalangle B$.

$\sin A + \sin B = \frac{7}{5} = 1{,}4$.

7. Fie S simetricul punctului D față de E. Punctul P este centrul cercului circumscris triunghiului echilateral DFS.

a) $DP = \frac{2}{3}\cdot h = \frac{DF\sqrt{3}}{3} = \frac{4\sqrt{3}}{3}$ cm. **b)** $R = DP = \frac{4\sqrt{3}}{3}$ cm.

8. **a)** $\sphericalangle ADM = 90^\circ$, $\sphericalangle DAM = 60^\circ$, $\sphericalangle AMD = 30^\circ$. **b)** $AM = 2\cdot x$, $MD = x\sqrt{3}$;

c) $4\cdot AD^2 = 4\cdot a^2$, iar $AB\cdot AC = BC\cdot AD = 4\cdot a^2$.

9. **a)** $\sin \sphericalangle ADB + \sin \sphericalangle BDC = \frac{3\sqrt{5}}{5}$. **b)** $(10 + 6\sqrt{5})$ cm.

10. **a)** $AR = 4$ cm, $TI = 4\sqrt{7}$ cm.

b) R, A, B coliniare în această ordine, $RA = 4$ cm, $AB = 12$ cm. $TA^2 = RA\cdot AB \Rightarrow \sphericalangle BTR = 90^\circ$.

11. $AC = 24\sqrt{3}$ cm, $BD = 24$ cm.

12. **a)** $EF = 10$ cm. **b)** $\mathscr{P}_{ACE} = 5\cdot(1 + \sqrt{3} + \sqrt{7})$ cm.

13. $P = 48\cdot(1 + \sqrt{3})$ cm, $\mathscr{A} = 288\sqrt{3}$ cm^2.

14. $d(M, DF) = 4$ cm.

15. $h = \frac{10\sqrt{6}}{7}$ cm.

16. **a)** $\sin \sphericalangle BAC = \frac{3}{5}$; **b)** $\mathscr{A} = 96$ cm^2.