

NALOGE ZA 2. LETNIK - PLANIMETRIJA - TRIKOTNIK

Naloge¹ so namenjene utrjevanju učne snovi in pripravi na preverjanje in ocenjevanje znanja

Ponovi pretvarjanje enot. Reši naloge v učbeniku: 164, 165

POSEBNI TRIKOTNIKI

PRAVOKOTNI TRIKOTNIK

1. Izračunaj ploščino pravokotnega trikotnika s podatki:

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|--|---------------------------------|
| (a) $a = 5mm, c = 4\sqrt{2}mm$ | [R: $\frac{5}{2}\sqrt{7}mm^2$] |
| (b) $a : b = 5 : 12, c = 78m$ | [R: $1080m^2$] |
| (c) $a : c = 3 : 5, b = 12dm$ | [R: $54dm^2$] |
| (d) $a_1 : b_1 = 9 : 16, c = 20cm$ | [R: $96cm^2$] |
| (e) $a_1 = 5dm, b_1 = 4dm$ | [R: $9\sqrt{5}dm^2$] |
| (f) $a = 15cm, v_c = 12cm$ | [R: $150cm^2$] |
| (g) $c = 10cm, \alpha = 60^\circ$ | [R: $21,65cm^2$] |
| (h) $a = 8m, \alpha = 42^\circ$ | [R: $35,54m^2$] |
| (i) $b = 17,25cm, \alpha = 17^\circ 20'$ | [R: $46,44cm^2$] |
| (j) $\star a - b = 5dm, c = 25dm$ | [R: $150dm^2$] |
| (k) $\star c - a = 18cm, a : b = 8 : 15$ | [R: $240cm^2$] |

Reši naloge v učbeniku: 179, 187, 188, 193

ENAKOKRAKI TRIKOTNIK

2. Izračunaj ploščino enakokrakega trikotnika s podatki:

- | | |
|---|--------------------|
| (a) $a = b = 10cm, c = 12cm$ | [R: $48cm^2$] |
| (b) $a = b = 2,5dm, \alpha = 18^\circ$ | [R: $1,84dm^2$] |
| (c) $v_a = 22cm, \alpha = 40^\circ$ | [R: $245,72cm^2$] |
| (d) $v_c = 12,5m, \gamma = 30^\circ$ | [R: $41,88m^2$] |
| (e) $c = 31,2dm, \gamma = 128^\circ$ | [R: $118,69dm^2$] |
| (f) $v_c = 45,3mm, \alpha = 72^\circ 50'$ | [R: $633,92mm^2$] |
| (g) $a : c = 5 : 6, v_c = 20cm$ | [R: $120cm^2$] |
| (h) $\star v_a = 6mm, v_c = 5mm$ | [R: $18,75mm^2$] |
| (i) $\star c = 18m, v_a = 14,4cm$ | [R: $108m^2$] |

¹Pripravila Vera Orešnik, prof.

Reši naloge v učbeniku: 190

ENAKOSTRANIČNI TRIKOTNIK

3. Izračunaj ploščino enakostraničnega trikotnika s podatki:

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|---------------------------|--|
| (a) $a = 6\sqrt{3}dm$ | [R: $27\sqrt{3}dm^2$] |
| (b) $a = (2 + \sqrt{2})m$ | [R: $\frac{1}{2}(3 + \sqrt{2})\sqrt{3}m^2$] |
| (c) $o = 3\frac{3}{7}dm$ | [R: $\frac{9}{49}\sqrt{3}dm^2$] |
| (d) $v = 12cm$ | [R: $48\sqrt{3}cm^2$] |
| (e) $v = 3\sqrt{6}mm$ | [R: $18\sqrt{3}mm^2$] |
| (f) $a + v = 2cm$ | [R: $4(7\sqrt{3} - 12)cm^2$] |

Reši naloge v učbeniku: 180, 181

POLJUBNI TRIKOTNIK

RAZREŠEVANJE TRIKOTNIKA

KOSINUSNI IZREK

4. Izračunaj tretjo stranico:

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|---|------------------|
| (a) $a = 8cm, c = 7cm, \beta = 120^0$ | [R: $13cm$] |
| (b) $b = 12dm, c = 20dm, \alpha = 34^040'$ | [R: $12, 22dm$] |
| (c) $b = 12, 8m, c = 14, 2m, \alpha = 100^030'$ | [R: $20, 78m$] |

5. Izračunaj na minuto natančno vse notranje kote trikotnika. Kateri kot je največji, kateri najmanjši?

- | | |
|----------------------------------|--|
| (a) $a = 6cm, b = 8cm, c = 10cm$ | [R: $\gamma = 90^0, \alpha = 36^052'$] |
| (b) $a = 7cm, b = 8cm, c = 9cm$ | [R: $\gamma = 73^024', \alpha = 48^011'$] |
| (c) $a = 2cm, b = 6cm, c = 3cm$ | [R: Trikotnik ni mogoč] |

Reši naloge v učbeniku: 224, 226, 228, 231, 233

SINUSNI IZREK

6. Izračunaj neznane stranice in kote v trikotniku.

- (a) $a = 10\text{cm}, \alpha = 60^\circ, \beta = 45^\circ$ [R: $b = \frac{10\sqrt{6}}{3}\text{cm}, c = \frac{5}{3}\sqrt{6}(\sqrt{3} + 1) \doteq 11,15\text{cm}, \gamma = 75^\circ$]
(b) $c = 8\text{dm}, \alpha = 30^\circ, \gamma = 135^\circ$ [R: $a = 4\sqrt{2}\text{dm}, b = 4(\sqrt{3} - 1)\text{dm}, \beta = 15^\circ$]
(c) $a = 24,5\text{m}, b = 76,8\text{m}, \beta = 36^\circ 54'$ [R: $c = 94,97\text{m}, \alpha = 11^\circ 3', \gamma = 132^\circ 3'$]
(d) $b = 20\text{cm}, c = 35\text{cm}, \gamma = 112^\circ 36'$ [R: $a = 22,05\text{cm}, \alpha = 35^\circ 34', \beta = 31^\circ 50'$]
(e) $\star a = 8\text{cm}, b = 10\text{cm}, \alpha = 30^\circ$ [R₁: $c_1 = 14,91\text{cm}, \beta_1 = 38^\circ 41', \gamma_1 = 111^\circ 19'$;
 R_2 : $c_2 = 2,42\text{cm}, \beta_2 = 141^\circ 19', \gamma_2 = 8^\circ 41'$]
(f) $\star a = 5\text{dm}, c = 4\text{dm}, \gamma = 40^\circ$ [R₁: $b_1 = 6,21\text{dm}, \alpha_1 = 53^\circ 28', \beta_1 = 86^\circ 32'$;
 R_2 : $b_2 = 1,45\text{dm}, \alpha_2 = 126^\circ 32', \beta_2 = 13^\circ 28'$]
(g) $a = 8\text{cm}, b = 20\text{cm}, \alpha = 30^\circ$ [Ni rešitve]

Reši naloge v učbeniku: 225, 230, 229, 232, 234, 236, 240

RADIJ TRIKOTNIKU OČRTANEGA KROGA

- (a) $R = 8\text{dm}, a = 10\text{dm}, \beta = 42^\circ 8'$ [R: $b = 10,87\text{dm}, c = 15,79\text{dm}, \alpha = 38^\circ 41', \gamma = 99^\circ 11'$]
(b) $R = 10\text{cm}, \alpha = 45^\circ, \gamma = 60^\circ$ [R: $a = 10\sqrt{2}\text{cm}, b = 5\sqrt{2}(\sqrt{3} + 1) \doteq 19,32\text{cm}, c = 10\sqrt{3}\text{cm}, \beta = 75^\circ$]

7. Izračunaj polmer trikotniku očrtanega kroga, če je podano razmerje notranjih kotov v trikotniku.

- (a) $2 : 3 : 4$ in največja stranica v trikotniku meri 8cm . [R: $R = \frac{4}{\sin 80^\circ} \doteq 4,06$]
(b) $4 : 5 : 6$ in najmanjša stranica v trikotniku meri 6dm . [R: $R = \frac{3}{\sin 48^\circ}$]

RADIJ TRIKOTNIKU VČRTANEGA TRIKOTNIKA

8. V trikotniku izračunaj:

- (a) $S = 30\text{cm}^2, o = 20\text{cm}; r = ?$ [R: $a = 3\text{cm}$]
(b) $o = 76\text{cm}, r = 12\text{cm}; S = ?$ [R: $S = 456\text{cm}^2$]
(c) $a = 3\text{cm}, b = 4\text{cm}, c = 5\text{cm}; S = ?, R = ?, r = ?$ [R: $r = 1\text{cm}, R = 2,5\text{cm}$]
(d) $a = b = 7\text{cm}, c = 10\text{cm}; S = ?; R = ?, r = ?$ [R: $r = 2,04\text{cm}, R = 5,00\text{cm}$]
(e) $a = b = c = 6\text{cm}; S = ?, R = ?, r = ?$ [R: $r = 1,73\text{dm}, R = 3,46\text{dm}$]

Reši naloge v učbeniku: 242, 245

9. Produkt polmerov včrtanega in očrtanega kroga pri enakostraničnem trikotniku je 24cm^2 . Izračunaj ploščino trikotnika.

$$[\text{R: } r = 2\sqrt{3}\text{cm}, R = 4\sqrt{3}\text{cm}, S = 36\sqrt{3}]$$

PLOŠČINA TRIKOTNIKA

10. Izračunaj ploščino trikotnika s podatki:

(a) $a = 6,5\text{cm}, v_a = 12\text{cm}$ [R: 39cm^2]

(b) $b = 5\frac{7}{11}\text{dm}, v_b = 4\frac{1}{8}\text{dm}$ [R: $11\frac{5}{8}\text{dm}^2$]

(c) $a = 8\text{mm}, b = 5\text{mm}, \gamma = 30^\circ$ [R: 10mm^2]

(d) $a = 7\text{m}, b = 8\sqrt{3}\text{m}, \gamma = 60^\circ$ [R: 42m^2]

(e) $b = 3\sqrt{2}\text{dm}, c = 12\sqrt{6}\text{dm}, \alpha = 150^\circ$ [R: $18\sqrt{3}\text{dm}^2$]

Reši naloge v učbeniku: 176,177,178,182,183,184,185,189, 192

HERONOV OBRAZEC

11. Izračunaj ploščino, polmer včrtanega in očrtanega kroga in vse kote in vse višine trikotnika.

(a) $a = c = 5\text{cm}, b = 6\text{cm}$
[R: $S = 12\text{cm}^2, r = \frac{3}{2}\text{cm}, R = \frac{25}{8}\text{cm}, v_a = \frac{24}{5}\text{cm}, v_b = 4\text{cm}, v_c = \frac{24}{5}\text{cm}$]

(b) $a = 13\text{m}, b = 20\text{m}, c = 21\text{m}$
[R: $S = 126\text{m}^2, r = \frac{14}{3}\text{m}, R = \frac{65}{6}\text{m}, v_b = 12,6\text{m}, v_c = 12\text{m}, v_a = \frac{252}{13}\text{m}$]

(c) $a = 15\text{dm}, b = 41\text{dm}, c = 52\text{dm}$
[R: $S = 234\text{dm}^2, r = \frac{13}{3}\text{dm}, R = \frac{205}{6}\text{dm}, v_a = 31,2\text{cm}, v_b = \frac{468}{41}\text{dm}, v_c = 9\text{dm}$]

12. Razreši trikotnike - izračunaj vse manjkajoče stranice in kote.

(a) $a = 7\text{cm}, b = 6\text{cm}, \alpha = 56^\circ 40'$ [R: $c = 8,18\text{cm}, \gamma = 77^\circ 36', \beta = 45^\circ 44'$]

(b) $a = 6\text{cm}, b = 7\text{cm}, c = 8\text{cm}$ [R: $\beta = 57^\circ 55', \alpha = 46^\circ 34', \gamma = 75^\circ 31'$]

(c) $a = 6\text{cm}, R = 7\text{cm}, \beta = 56^\circ$ [R: $b = 11,61\text{cm}, c = 13,84\text{cm}, \alpha = 25^\circ 23', \gamma = 98^\circ 37'$]

(d) $R = 16\text{cm}, \alpha = 112^\circ, \beta = 43^\circ$ [R: $a = 29,67\text{cm}, b = 21,82\text{cm}, c = 13,52\text{cm}, \gamma = 25^\circ$]

(e) $S = 450\text{m}^2, \alpha = 16^\circ, \beta = 44^\circ$ [R: $a = 20,31\text{m}, b = 51,18\text{m}, c = 63,81\text{m}, \gamma = 120^\circ$]

(f) $v_a = 6\text{dm}, \beta = 115^\circ, \gamma = 5^\circ$ [R: $a = 65,78\text{dm}, b = 68,84\text{dm}, c = 6,62\text{dm}, \alpha = 60^\circ$]

(g) $S = 2450\text{cm}^2, a = 45\text{cm}, \beta = 125^\circ$
[R: $c = \frac{2S}{a \sin \beta} = 132,93\text{cm}, b = 162,96\text{cm}, \alpha = 13^\circ 4', \gamma = 41^\circ 56'$]

(h) $R = 10\text{cm}, c = 10\sqrt{2}\text{cm}, \beta = 30^\circ$ [R: $a = 19,32\text{cm}, b = 10\text{cm}, \alpha = 105^\circ, \gamma = 45^\circ$]

(i) $a = 8\text{cm}, t_a = 4,5\text{cm}, \beta = 55^\circ$ [R: $b = 6,60\text{cm}, c = 5,38\text{cm}, \alpha = 83^\circ 7', \gamma = 41^\circ 53'$]