Pitagorov izrek, izrazi

A

Ime in priimek: _____ Razred: _____

Datum: _____ Točke: _____ / 44, _____ %

Kriterij:

Nezadostno (1)	Zadostno (2)	Dobro (3)	Prav dobro (4)	Odlično (5)
0 – 21,5	22 – 28	28,5 – 34,5	35 – 39	39,5 – 44

9

1. Izračunaj in poenostavi:

a) $5\,(2a - 3b) =$ $10a - 15b$

b) $(x - 4)\,(x + 7) =$ $x^2 + 7x - 4x - 28 = x^2 + 3x - 28$

c) $b - (2\,b + 0{,}3\,b) =$ $b - 2b - 0{,}3b = b - 2{,}3b = -1{,}3b$

d) $-6\,x\,y^2 \cdot (-2\,x^3\,y) =$ $12\,x^4\,y^3$

e) $(x - 7)^2 =$ $x^2 - 14x + 49$

f) $(-4 - \frac{1}{2}c)^2 =$ $16 + 4c + \frac{1}{4}c^2$

g) $(x + 2y)\,(x - 2y) =$ $x^2 - 4y^2$

h) $(a - 1{,}3\,b)\,(a + 1{,}3\,b) =$ $a^2 - 1{,}69\,b^2$

i) $(b + 1)\,(b^2 - b + 1) =$ $b^3 - b^2 + b + b^2 - b + 1 = b^3 + 1$

2

2. Izspostavi največji skupni faktor:

a) $18\,a^2 - 6\,a =$ $6a(3a - 1)$

b) $12cd - 4cd^2 + 20c^2d^2 =$ $= 4cd(3 - d + 5cd)$

4

3. Razstavi izraze:

a) $x^2 - 256 =$ $(x - 16)(x + 16)$

b) $-121\,c^2 + 9\,d^2 =$ $(-11c + 3d)(11c + 3d)$

c) $a^2 + 2ab + b^2 =$ $(a + b)^2$

d) $x^2 - 8x + 16 =$ $(x - 4)^2$

15t

6

4. Poenostavi izraza:

a) $(x+3)(x-3)+(x+2)(x-1)=$

$= x^2 - 9 + x^2 - x + 2x - 2 =$

$= 2x^2 + x - 11$

b) $a(a-4)-(a-5)^2=$

$= a^2 - 4a - (a^2 - 10a + 25) =$

$= a^2 - 4a - a^2 + 10a - 25 =$

$= 6a - 25$

3

5. Poenostavi izraz in izračunaj njegovo vrednost za $y = -1$:

$y^2 + 3 - ((1-y)(1+y) + (y-2)^2) =$

$= y^2 + 3 - (1 - y^2 + y^2 - 4y + 4) = 1t$

$= y^2 + 3 - 1 + y^2 - y^2 + 4y - 4 =$

$= y^2 + 4y - 2 = 1t$

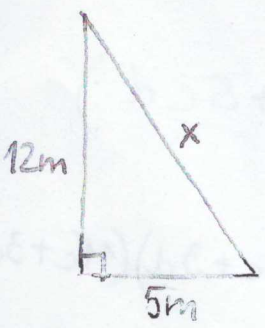
$= (-1)^2 + 4 \cdot (-1) - 2 =$

$= 1 - 4 - 2 = -5$ 1t

Navodilo: Pri nalogah 6 – 11 so obvezne skice z oznakami!

2

6. Ptica se spusti z vrha 12 m visokega drevesa in sede na tla 5 m od drevesnega debla. Kako dolgo pot je preletela, če je letela po najkrajši poti?



$x^2 = 12^2 + 5^2$

$x^2 = 144 + 25$

$x^2 = 169$

$x = \sqrt{169}$

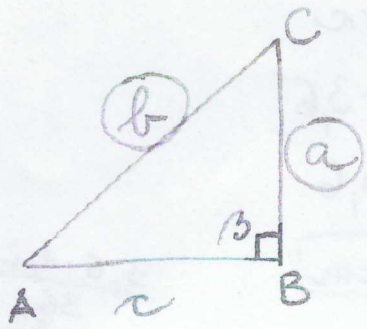
$x = 13\,m$

Odg.: Ptica je preletela 13 m dolgo pot.

11t

4

7. Izračunaj obseg in ploščino pravokotnega trikotnika s podatki:
   a = 24 cm
   b = 25 cm
   β = 90°



$c^2 = b^2 - a^2$

$c^2 = 25^2 - 24^2$

$c^2 = 625 - 576$

$c^2 = 49$

$c = \sqrt{49}$

$c = 7\,cm$

$o = a + b + c$

$o = 24 + 25 + 7$

$o = 56\,cm$

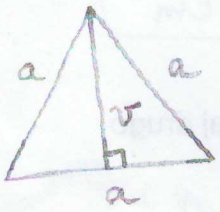
$\frac{24 \cdot 24}{48}$ $\frac{96}{576}$ $\frac{625}{-576}$ $\frac{}{49}$

$p = \frac{a \cdot c}{2}$

$p = \frac{24 \cdot 7}{2} = 12 \cdot 7 = 84\,cm^2$

3

8. Izračunaj obseg, višino in ploščino enakostraničnega trikotnika s stranico 8 cm.



$o = 3 \cdot a$

$o = 3 \cdot 8$

$o = 24\,cm$

$v = \frac{a\sqrt{3}}{2}$

$v = \frac{8\sqrt{3}}{2}$

$v = 4\sqrt{3}\,cm$

$p = \frac{a^2\sqrt{3}}{4}$

$p = \frac{8^2\sqrt{3}}{4}$

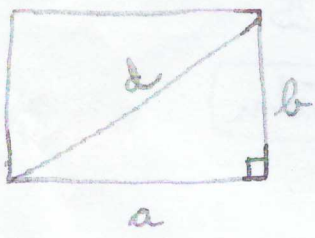
$p = \frac{64\sqrt{3}}{4}$

$p = 16\sqrt{3}\,cm^2$

$a = 8\,cm$

3

9. Koliko meri ploščina pravokotnika z diagonalo d = $\sqrt{6}$ cm in dolžino a = $\sqrt{2}$ cm?



$b^2 = d^2 - a^2$

$b^2 = (\sqrt{6})^2 - (\sqrt{2})^2$

$b^2 = 6 - 2$

$b^2 = 4$

$b = 2\,cm$

$p = a \cdot b$

$p = \sqrt{2} \cdot 2$

$p = 2\sqrt{2}\,cm^2$

$d = \sqrt{6}\,cm$

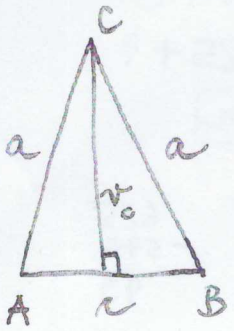
$a = \sqrt{2}\,cm$

$p =$

10t

4

10. Izračunaj obseg in ploščino enakokrakega trikotnika s krakom a = 3 cm in višino na osnovnico v_c = 2,4 cm.



$a = 3\,cm$

$v_c = 2{,}4\,cm$

$c =$

$o =$

$p =$

$\left(\frac{c}{2}\right)^2 = a^2 - v_c^2$

$\left(\frac{c}{2}\right)^2 = 3^2 - 2{,}4^2$

$\left(\frac{c}{2}\right)^2 = 9 - 5{,}76$

$\left(\frac{c}{2}\right)^2 = 3{,}24$

$\frac{c}{2} = 1{,}8$

$c = 3{,}6\,cm$

$o = 2 \cdot a + c$

$o = 2 \cdot 3 + 3{,}6$

$o = 6 + 3{,}6$

$o = 9{,}6\,cm$

$p = \frac{c \cdot v_c}{2}$

$p = \frac{3{,}6 \cdot 2{,}4 \cdot 1{,}2}{2}$

$p = 4{,}32\,cm^2$

$3{,}6 \cdot 1{,}2$
36
72
$4{,}32$

4

11. V rombu merita ploščina 24 dm^2 in ena diagonala 8 dm. Izračunaj drugo diagonalo in obseg romba.

$p = 24\,dm^2$

$e = 8\,dm$

$f =$

$o =$

$p = \frac{e \cdot f}{2}$

$24 = \frac{8 \cdot f}{2}$

$24 = 4 \cdot f$

$f = 6\,dm$

$a^2 = \left(\frac{e}{2}\right)^2 + \left(\frac{f}{2}\right)^2$

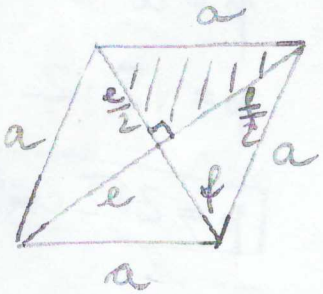
$a^2 = \left(\frac{8}{2}\right)^2 + \left(\frac{6}{2}\right)^2$

$a^2 = 4^2 + 3^2$

$a^2 = 16 + 9$

$a^2 = 25$

$a = 5\,dm$



$o = 4 \cdot a$

$o = 4 \cdot 5$

$o = 20\,dm$

8t