

Oktober 2023

1. preverjanje

Ime in priimek, razred: _____

Točke: _____ / 52

Procenti: _____ Informativna ocena: _____

9. razred

1. naloga: _____ / 8 točk

Izračunaj!

$$3a \cdot a = 3a^2$$

$$2x^2 \cdot (-6x) = -12x^3$$

$$\frac{2}{3}x^2y \cdot 6xy^3 = \frac{2 \cdot 6 \cdot 2}{3 \cdot 1} x^3y^4 = 4x^3y^4$$

$$\underline{4b - 2a} - \underline{6b + 5a} = 3a - 2b$$

$$4ax \cdot 2xa = 8a^2x^2$$

$$(5x^2y^3)^3 = 125x^6y^9$$

$$-5a + 3,1a = -1,9a$$

$$\underline{6x^2} - 13x + \underline{2x^2} = 8x^2 - 13x$$

2. naloga: _____ / 8 točk

Razstavi!

$$15x - 21y = 3(5x - 7y)$$

$$-30ab^2c - 10a^2bc^3 = -10abc(3b + ac^2)$$

$$25x^2 - 81y^2 = (5x - 9y)(5x + 9y)$$

$$x^2 + 3x - 18 = (x + 6)(x - 3)$$

\downarrow
3 · (-6)

$$10a - 8a^2 = 2a(5 - 4a)$$

$$12x^3y^3 - 4xy^2 = 4xy^2(3x^2y - 1)$$

$$4a^2 - 12a + 9 = (2a - 3)^2$$

$$54a^3 - 24a = 6a(9a^2 - 4) = 6a(3a - 2)(3a + 2)$$

3. naloga: _____ / 4 točke

a) Kvadriraj po formuli:

$$(3x + 2)^2 = 9x^2 + 12x + 4$$

$$(-4x + 3y)^2 = 16x^2 - 24xy + 9y^2$$

b) Izračunaj produkt vsote in razlike dveh enakih členov:

$$(3x - 4)(3x + 4) = 9x^2 - 16$$

$$\left(\frac{2}{5}x - 3y\right)\left(\frac{2}{5}x + 3y\right) = \frac{4}{25}x^2 - 9y^2$$

4. naloga: _____ / 9 točk

Poenostavi izraze:

$$2x + (54x + 7) - 10 =$$

$$= \underline{2x + 54x} + \underline{7} - \underline{10} =$$
$$= 56x - 3$$

$$3x - (x + 5)^2 - 10x =$$

$$= 3x - (x^2 + 10x + 25) - 10x =$$
$$= \underline{3x} - \underline{x^2} - \underline{10x} - \underline{25} - \underline{10x} =$$
$$= -x^2 - 17x - 25$$

$$\begin{aligned}
& 2 - (4x - 1)(4x + 1) + (2x + 8)^2 = \\
& = 2 - (16x^2 - 1) + (4x^2 + 32x + 64) = \\
& = \underline{2} - \underline{16x^2} + \underline{1} + \underline{4x^2} + \underline{32x} + \underline{64} = \\
& = -12x^2 + 32x + 67
\end{aligned}$$

5. naloga: ____ / 4 točke

Najprej poenostavi izraz in nato izračunaj njegovo vrednost za $a = 2$ in $b = -2$

$$\begin{aligned}
& (a - b)^2 - (2a + 2b)(2a - 2b) = \\
& = a^2 - 2ab + b^2 - (4a^2 - 4b^2) = \\
& = \underline{a^2} - \underline{2ab} + \underline{b^2} - \underline{4a^2} + \underline{4b^2} = \\
& = -3a^2 - 2ab + 5b^2 = \\
& = -3 \cdot 2^2 - 2 \cdot 2 \cdot (-2) + 5 \cdot (-2)^2 = \\
& = -3 \cdot 4 + 8 + 5 \cdot 4 = \\
& = -12 + 8 + 20 = \\
& = \underline{16}
\end{aligned}$$

6. naloga: ____ / 2 točki

K besedilu zapiši ustrezen izraz.

a) Štirikratnik števila x zmanjšaj za 4.

$$4x - 4$$

b) Od kvadrata vsote števil $3x$ in 5 odštej trikratnik razlike števil x in 6 .

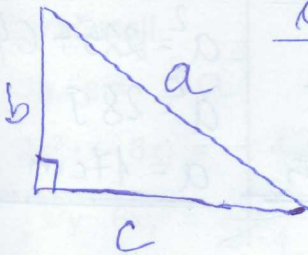
$$(3x + 5)^2 - 3(x - 6)$$

7. naloga: ____ / 3 točke

Izračunaj obseg in ploščino pravokotnega trikotnika s katetama 20 cm in 21 cm.

$(\sqrt{841} = 29)$

Skica:



$$b = 20 \text{ cm}$$

$$c = 21 \text{ cm}$$

$$p = 210 \text{ cm}^2$$

$$\sigma = 70 \text{ cm}$$

$$a = 29 \text{ cm}$$

$$1) p = \frac{b \cdot c}{2}$$

$$p = \frac{20 \cdot 21}{2} = 210$$

$$p = 210 \text{ cm}^2$$

$$3) \sigma = a + b + c$$

$$\sigma = 29 + 20 + 21 = 70$$

$$\sigma = 70 \text{ cm}$$

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

$$a^2 = 21^2 + 20^2$$

$$a^2 = 441 + 400$$

$$a^2 = 841$$

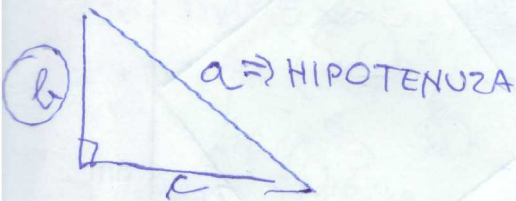
$$a = 29 \text{ cm}$$

Obseg = 70 cm . Ploščina = 210 cm² .

8. naloga: ____ / 3 točke

Ploščina pravokotnega trikotnika meri 100 cm², ena kateta pa 20 cm. Izračunaj hipotenuzo tega trikotnika. (Če je potrebno delno koreni).

Skica:



$$p = 100 \text{ cm}^2$$

$$b = 20 \text{ cm}$$

$$a =$$

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

$$100 = \frac{20 \cdot c}{2}$$

$$100 = 10c$$

$$c = 10 \text{ cm}$$

$$a^2 = b^2 + c^2$$

$$a^2 = 20^2 + 10^2$$

$$a^2 = 400 + 100$$

$$a^2 = 500$$

$$a = \sqrt{500} = \sqrt{5 \cdot 100}$$

$$a = 10\sqrt{5} \text{ cm}$$

Hipotenuza = 10√5 cm

9. naloga; ____ / 3 točke

Izračunaj obseg, višino in ploščino enakostraničnega trikotnika s stranico a = 6 cm.

Skica:



$$a = 6 \text{ cm}$$

$$\sigma = 3a$$

$$\sigma = 3 \cdot 6$$

$$\sigma = 18 \text{ cm}$$

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

$$N = \frac{6\sqrt{3}}{2}$$

$$N = 3\sqrt{3} \text{ cm}$$

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

$$p = \frac{6^2\sqrt{3}}{4}$$

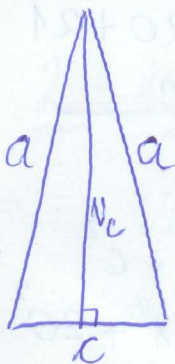
$$p = \frac{36\sqrt{3}}{4} = 9\sqrt{3} \text{ cm}^2$$

Obseg = 18 cm . Višina = 3√3 cm . Ploščina = 9√3 cm² .

10. naloga: ___ / 3 točke

Ploščina enakokrakega trikotnika meri 120 cm^2 , višina na osnovnico pa 15 cm . Izračunaj obseg.

Skica:



$$p = 120 \text{ cm}^2$$

$$V_c = 15 \text{ cm}$$

$$\sigma =$$

$$a = 17 \text{ cm}$$

$$c = 16 \text{ cm}$$

$$3) \sigma = 2a + c$$

$$\sigma = 2 \cdot 17 + 16$$

$$\sigma = 34 + 16$$

$$\sigma = \underline{50 \text{ cm}}$$

$$1) p = \frac{c \cdot V_c}{2}$$

$$120 = \frac{c \cdot 15}{2}$$

$$240 = c \cdot 15$$

$$c = \underline{16 \text{ cm}}$$

$$2) a^2 = V_c^2 + \left(\frac{c}{2}\right)^2$$

$$a^2 = 15^2 + 8^2$$

$$a^2 = 225 + 64$$

$$a^2 = 289$$

$$a = \underline{17 \text{ cm}}$$

$$\frac{240 : 15 = 16}{90}$$

Obseg = 50 cm

11. naloga: ___ / 2 točki

Na parceli kvadratne oblike imamo ogrado, prav tako kvadratne oblike, v kateri se pasejo zajci. Koliko metrov ograje potrebujemo, da ogradimo zelenico v kateri se pasejo zajci?

$$a^2 = 8^2 + 6^2$$

$$a^2 = 64 + 36$$

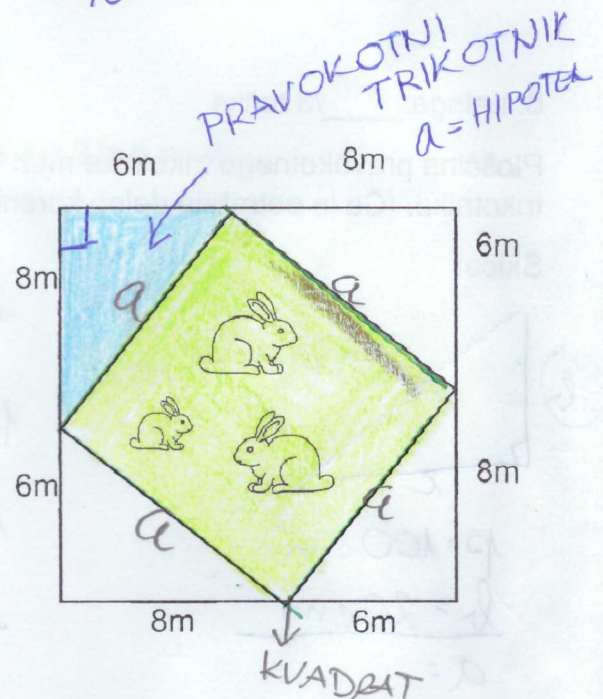
$$a^2 = 100$$

$$a = 10 \text{ m}$$

$$\sigma = 4a$$

$$\sigma = 4 \cdot 10$$

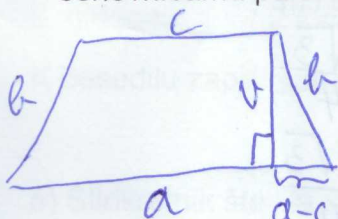
$$\sigma = \underline{40 \text{ m}}$$



Potrebujemo Potrebujemo 40 m ograje.

12. naloga: ___ / 3 točke

V enakokrakem trapezu meri osnovnica $a = 25 \text{ cm}$, srednjica $s = 19 \text{ cm}$, razdalja med osnovnicama pa 8 cm . Izračunaj dolžino kraka in obseg.



$$a = 25 \text{ cm}$$

$$s = 19 \text{ cm}$$

$$v = 8 \text{ cm}$$

$$b^2 = v^2 + \left(\frac{a-c}{2}\right)^2$$

$$b^2 = 8^2 + \left(\frac{25-13}{2}\right)^2$$

$$b^2 = 64 + 36$$

$$b = \underline{10 \text{ cm}}$$

$$s = \frac{a+c}{2}$$

$$19 = \frac{25+c}{2}$$

$$38 = 25+c$$

$$c = 13 \text{ cm}$$

$$\sigma = a + 2b + c$$

$$\sigma = 25 + 2 \cdot 10 + 13$$

$$\sigma = 25 + 20 + 13$$

$$\sigma = \underline{58 \text{ cm}}$$

Krak = 10 cm. Obseg = 58 cm