

# Pisana provjera znanja

## - Algebarski izrazi -

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1. Provedi kvadriranje:

$$\begin{aligned} a) (8a+3)^2 \\ = 64a^2 + 2 \cdot 8a \cdot 3 + 9 \\ = 64a^2 + 48a + 9 \quad (+1) \end{aligned}$$

$$\begin{aligned} b) \left(\frac{3}{4} + \frac{1}{6}\right)^2 \\ = \frac{9}{16}a^2 + 2 \cdot \frac{3}{4}a \cdot \frac{1}{6} + \frac{1}{36} \\ = \frac{9}{16}a^2 + \frac{1}{4}a + \frac{1}{36} \quad (+1) \end{aligned}$$

2. Ako je  $a+b=3$ ,  $ab=-1$ , koliko je  $a^2+b^2$ ?

$$(a+b)^2 - 2ab = 9 + 2 = 11 \quad (+1)$$

3. Što je algebarski izraz?

→ bilo koji izraz koji sačinjavaju varijable i konstante povezane osnovnim algebarskim operacijama (+1)

4. Zapiši u obliku kvadrata binoma:

$$\begin{aligned} a) \frac{1}{4}a^2b^2 - 3ab + 9 \\ = \left(\frac{1}{2}ab + 3\right)^2 \rightarrow 1^2 \pm 2 \cdot 1 \cdot 11 + 11^2 \quad (+1) \end{aligned}$$

$$\begin{aligned} b) 4a^2 + 28a + 49 \\ = (2a + 7)^2 \quad (+1) \end{aligned}$$

$$\begin{aligned} c) 9a^2 - 30ab + 25b^2 \\ = (3a - 5b)^2 \quad (+1) \end{aligned}$$

5. Pojednostavi:

$$\begin{aligned} 2a(3a-2b)^2 + 6b(2a-3b)^2 \\ = 2a(3^2a^2 - 2 \cdot 3a \cdot 2b + 2^2b^2) + 6b(2^2a^2 - 2 \cdot 2a \cdot 3b + 3^2b^2) \\ = 2a(9a^2 - 12ab + 4b^2) + 6b(4a^2 - 12ab + 9b^2) \\ = 18a^3 - 24ab^2 + 8ab^2 + 24a^2b - 72ab^2 + 54b^3 \\ = 18a^3 - 64ab^2 + 54b^3 \quad (+1) \end{aligned}$$

6. Kubiraj:

$$\begin{aligned} (4a + 3b^2)^3 \\ = 4^3a^3 + 3 \cdot 4^2a^2 \cdot 3b^2 + 3 \cdot 4a \cdot 3^2(b^2)^2 + 3^3(b^2)^3 \\ = 64a^3 + 144a^2b^2 + 108ab^4 + 27b^6 \quad (+1) \end{aligned}$$

7. Što je monom?

→ najjednostavniji algebarski izraz

↳ jednočkin, umnožak konstanti i varijabli (+1)

$$8. (a^2 + 6b^3)(a^2 - 6b^3) = a^4 - 36b^6 \quad (+1)$$

9. Napiši u obliku umnoška:

$$a) 9 - a^2 b^2 = (3 - ab)(3 + ab) \quad (+1)$$

$$b) (2ab - 3)(2ab + 3) = 4a^2 b^2 - 9 \quad (+1)$$

$$c) \left(\frac{1}{2} ab + \frac{3}{4} bc\right) \left(\frac{1}{2} ab - \frac{3}{4} bc\right) = \frac{1}{4} a^2 b^2 - \frac{9}{16} b^2 c^2 \quad (+1)$$

10. Izračunaj:

$$(a+b+c)(a-b-c) = a^2 - (b+c)^2 = a^2 - b^2 - c^2 - 2bc \quad (+1)$$

$$11. a) \frac{a^4 - b^4}{a^2 - b^2} = \frac{(a^2 - b^2)(a^2 + b^2)}{(a-b)(a+b)} = \frac{(a-b)(a+b) \cdot (a^2 + b^2)}{(a-b)(a+b)} = a^2 + b^2 \quad (+1)$$

$$b) \frac{5a^2 - 30a + 9}{25a^2 + 30a + 9} = \frac{(5a-3)^2}{(5a+3)^2} = \frac{5a-3}{5a+3} \quad (+1)$$

$$c) \frac{2x}{x+1} + \frac{2}{x+1} = \frac{2x+2}{x+1} = \frac{2(x+1)}{x+1} = 2 \quad (+1)$$

$$d) \frac{x}{y^2} - \frac{1}{y^2} = \frac{x-1}{y^2} \quad (+1)$$

$$e) \frac{x^2 - 8x + 1}{x^2 - 2x} = \frac{(x-1)^2}{(x-2)(x+1)} \quad (+1) \quad f) \frac{a^2 - 4}{a^2 - 5a} = \frac{(a-2)(a+2)}{a(a-5)} = \frac{a+2}{a} \quad (+1)$$

$$g) \frac{2a-2}{2a-6} = \frac{a-1}{a-3} = \frac{a-1}{2(a-3)} = \frac{a-1}{3(a-3)} = \frac{a-1}{3(a-3)} - \frac{a+3}{3(a-3)} = \frac{3(a-1) - (a+3)}{3(a-3)} \quad (+1)$$

$$= \frac{3a - 3 - a - 3}{3(a-3)} = \frac{2a - 6}{3(a-3)} = \frac{2(a-3)}{3(a-3)} = \frac{2}{3} \quad (+1)$$

$$h) \frac{2x}{2x-2} - \frac{2x+1}{3x-3} = \frac{2x+1}{3(x-1)} = \frac{6x - (4x+2)}{6(x-1)} = \frac{2x-2}{6(x-1)} = \frac{2(x-1)}{6(x-1)} = \frac{1}{3} \quad (+1)$$