

Ime in priimek: RESITVE Razred: 8. \_\_\_\_\_

Št. točk: \_\_\_\_\_ / 80, \_\_\_\_\_ % Ocena: \_\_\_\_\_

Kriterij:

Nzd (1)	Zd (2)	Db (3)	Pdb (4)	Odl (5)
0 – 39,5	40 – 51,5	52 – 63,5	64 – 71,5	72 – 80

1) Zapiši produkte kot potence in izračunaj njihovo vrednost, kjer lahko.

$$2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 = 2^6 = 64 \quad (\text{po } 0,5\text{t})$$

$$(-1) \cdot (-1) \cdot (-1) \cdot (-1) \cdot (-1) = (-1)^5 = -1$$

$$a \cdot a \cdot a = a^3 \quad (1\text{t})$$

$$\frac{1}{3} \cdot \frac{1}{3} \cdot \frac{1}{3} \cdot \frac{1}{3} = \left(\frac{1}{3}\right)^4 = \frac{1}{81}$$

$$\begin{array}{r} 1,44 \cdot 1,2 \\ \hline 144 \\ 288 \\ \hline 1,728 \end{array}$$

\_\_\_\_ / 4

2) Izračunaj vrednosti potenc.

a)  $(-3)^3 = -27$

b)  $-4^2 = -16$

c)  $(-10)^3 = -1000$

d)  $1,2^3 = 1,728$

e)  $6^0 = 1$

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

g)  $(-5x^2)^3 = -125x^6$

h)  $\left(\frac{2}{3}\right)^3 = \frac{8}{27}$

\_\_\_\_ / 8

3) Kvadriraj. Uporabi pravila za kvadriranje.

a)  $13^2 = 169$

b)  $600^2 = 360000$

c)  $0,05^2 = 0,0025$

d)  $1,4^2 = 1,96$

e)  $\left(-\frac{15}{17}\right)^2 = \frac{225}{289}$

f)  $\left(1\frac{2}{3}\right)^2 = \left(\frac{5}{3}\right)^2 = \frac{25}{9} = 2\frac{7}{9}$

h)  $\frac{5^2}{6} = \frac{25}{6} = 4\frac{1}{6}$

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4) Izračunaj spretno. Uporabi pravila za potenciranje.

a)  $2 \cdot 2^2 \cdot 2^{-3} = 2^3 \cdot 2^{-3} = 2^0 = 1$

b)  $(-7)^7 : (-7)^5 = (-7)^2 = 49$

c)  $0,125^4 \cdot 8^4 = 1^4 = 1$

d)  $36^3 : 12^3 = 3^3 = 27$

e)  $\frac{8^5 \cdot 8^{10}}{8^2 \cdot 8^{14}} = \frac{8^{15}}{8^{16}} = (8^{-1}) = \frac{1}{8}$

f)  $2 \cdot 5 \cdot 5^3 \cdot 2^3 = 10 \cdot 10^3 = 10^4 = 10000$

0,5t za postopek  
0,5t za rezultat

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5) Izračunaj kvadratne korene števil.

a)  $\sqrt{64} = 8$

b)  $\sqrt{121} = 11$

c)  $\sqrt{0,0016} = 0,04$

d)  $\sqrt{2560000} = 1600$

e)  $\sqrt{\frac{36}{81}} = \frac{6}{9} = \frac{2}{3}$

f)  $\sqrt{\frac{44}{99}} = \sqrt{\frac{4}{9}} = \frac{2}{3}$

g)  $\frac{\sqrt{64}}{49} = \frac{8}{49}$

h)  $\sqrt{2\frac{2}{49}} = \sqrt{\frac{100}{49}} = \frac{10}{7} = 1\frac{3}{7}$

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6) Zapiši med katerima zaporednima naravnima številoma ležijo kvadratni koreni števil.

a)  $\sqrt{92}$  leži med 9 in 10.

b)  $\sqrt{271}$  leži med 16 in 17.

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7) Delno koreni.

$\sqrt{125} = \sqrt{25 \cdot 5} = 5 \cdot \sqrt{5}$

$\sqrt{\frac{3x^2}{4}} = \frac{x\sqrt{3}}{2}$

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8) Racionaliziraj imenovalac ulomka. Rezultat še delno koreni in poenostavi.

a)  $\frac{2}{\sqrt{2}} = \frac{2\sqrt{2}}{\sqrt{2} \cdot \sqrt{2}} = \frac{2\sqrt{2} \cdot 1}{2 \cdot 1} = \underline{\underline{\sqrt{2}}}$  1t

b)  $\frac{3}{\sqrt{12}} = \frac{3 \cdot \sqrt{12} \cdot 1}{\sqrt{12} \cdot 4} = \frac{\sqrt{4 \cdot 3}}{4} = \frac{2 \cdot \sqrt{3} \cdot 1}{4 \cdot 2} = \frac{\sqrt{3}}{2}$

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9) Izračunaj spretno.

$\sqrt{144 \cdot 225} = 12 \cdot 15 = \underline{\underline{180}}$   $\frac{15 \cdot 12}{150} + \frac{30}{180}$

$\sqrt{3} \cdot \sqrt{27} = \sqrt{81} = \underline{\underline{9}}$

0,5t postopek

$\sqrt{48 : 3} = \sqrt{16} = \underline{\underline{4}}$

$\frac{\sqrt{20}}{\sqrt{45}} = \sqrt{\frac{20}{45}} = \sqrt{\frac{4}{9}} = \frac{2}{3}$

0,5t rezultat

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10) Izračunaj vrednost izraza.

a)  $(3-7)^3 : (6-8)^2 =$   
 $= (-4)^3 : (-2)^2 = 1t$   
 $= -64 : 4 = 1t$   
 $= \underline{\underline{-16}} \quad 1t$

b)  $(-4) \cdot \sqrt{\frac{9}{16}} - (-6) \cdot \sqrt{\frac{25}{36}} + 5 \cdot (-\sqrt{2})^2 =$   
 $= (-4) \cdot \frac{3}{4} - (-6) \cdot \frac{5}{6} + 5 \cdot 2 = 1,5t$   
 $= -\frac{4 \cdot 3 \cdot 1}{1 \cdot 4 \cdot 1} - \left( -\frac{6 \cdot 5 \cdot 1}{1 \cdot 6 \cdot 1} \right) + 10 =$   
 $= \underline{\underline{-3}} + \underline{\underline{5}} + \underline{\underline{10}} = 1,5t$   
 $= 15 - 3 =$   
 $= \underline{\underline{12}} \quad 1t$

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11) Izračunaj in poenostavi:

a)  $ab \cdot ab = a^2 b^2$

b)  $5a \cdot (-6b) \cdot (-3c) = 90abc$

c)  $(-2abc) (+3a^2b) = -6a^3 b^2 c$

d)  $\frac{2}{3}xy^3 \cdot 9x^2y^2 = \frac{2 \cdot 9 \cdot 3}{3 \cdot 1 \cdot 1} x^3 y^5 = 6x^3 y^5$

e)  $7a + 6a = 13a$

f)  $4d^3 - 3d^3 - 2d^3 = -d^3$

g)  $0,3x - 0,02y + 0,1y - 0,04x = 0,26x + 0,08y$

h)  $4b^2 - 3b + b^2 - b + 2 = 5b^2 - 4b + 2$

i)  $3 \cdot (3a + b) = 9a + 3b$

j)  $b(a - c) = ab - bc$

k)  $(1 - x)x^3 = x^3 - x^4$

l)  $(a + b - 2ab)(-3ab) = -3a^2b - 3ab^2 + 6a^2b^2$

m)  $(a + 3) \cdot (a + 4) = a^2 + 4a + 3a + 12 = a^2 + 7a + 12$

n)  $(2a - 5)(a - 3) = 2a^2 - 6a - 5a + 15 = 2a^2 - 11a + 15$

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

p)  $(a^2 + 4a + 16)(a - 4) = a^3 - 4a^2 + 4a^2 - 16a + 16a - 64 = a^3 - 64$

$$\begin{array}{r} 0,30 \\ -0,04 \\ \hline 0,26 \end{array}$$

$$\begin{array}{r} 0,10 \\ -0,02 \\ \hline 0,08 \end{array}$$

po 0,5t

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12) Poenostavi izraz:

a)  $(-2a^2 - 2ab + b) - (3a^2 - 2ab - 2b) =$

$= -2a^2 - 2ab + b - 3a^2 + 2ab + 2b = 1t$

$= \underline{\underline{-5a^2 + 3b}} \quad 1t$

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b)  $x(2a + 9 - 3b) - 7a(3x - 5) - (35a - 5x) =$

$= \underline{2ax} + \underline{9x} - \underline{3xb} - \underline{21ax} + \underline{35a} - \underline{35a} + \underline{5x} =$

$= \underline{\underline{-19ax - 3bx + 14x}} \quad 1t$

\_\_\_ / 3,5

$$\begin{aligned}
 \text{c) } & (2a + 5)(2a - 1) - (-3a + 1)(-a + 4) = \\
 & = 4a^2 - 2a + 10a - 5 - (3a^2 - 12a - a + 4) = \\
 & = \underline{4a^2 - 2a + 10a - 5} - \underline{3a^2 + 12a + a - 4} = 0,5t \\
 & = \underline{\underline{a^2 + 21a - 9}} \quad 1t
 \end{aligned}$$

\_\_\_ / 3,5

13) Izračunaj vrednost izraza, če je  $a = -1$ ,  $b = -4$  in  $c = -2$ :

$$\begin{aligned}
 \frac{b-a}{c} - \frac{a}{b-c} &= \frac{-4 - (-1)}{-2} - \frac{-1}{-4 - (-2)} = 0,5t \\
 &= \underbrace{\frac{-4+1}{-2} - \frac{-1}{-4+2}}_{0,5t} = \frac{-3}{-2} - \frac{-1}{-2} = \underbrace{\frac{3}{2} - \frac{1}{2}}_{0,5t} = \frac{2}{2} = \underline{\underline{1}}_{0,5t}
 \end{aligned}$$

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14) Izračunaj  $3 \cdot A - 2 \cdot B \cdot C$ , če je:  $A = x^2$ ,  $B = x - 1$ ,  $C = x + 1$ .

$$\begin{aligned}
 & 3 \cdot x^2 - 2 \cdot (x - 1) \cdot (x + 1) = 0,5t \\
 & = 3x^2 - 2(x^2 - 1) = 0,5t \\
 & = 3x^2 - 2(x^2 - 1) = \\
 & = 3x^2 - 2x^2 + 2 = 0,5t \\
 & = \underline{\underline{x^2 + 2}} \quad 0,5t
 \end{aligned}$$

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#### DODATNA NALOGA

Izračunaj:

$$\begin{aligned}
 \text{a) } & \frac{\sqrt{2^3 + \sqrt{2^4 - 3 \cdot 5}}}{(3^3 - 2 \cdot \sqrt{121}) : \sqrt{25} + \sqrt{4}} = \\
 & = \frac{\sqrt{8 + \sqrt{16 - 15}}}{(27 - 2 \cdot 11) : 5 + 2} = 0,5t \\
 & = \frac{\sqrt{8 + \sqrt{1}}}{5 : 5 + 2} = 0,5t \\
 & = \frac{3}{3} = \underline{\underline{1}} \\
 & \quad 0,5t \quad \quad 0,5t
 \end{aligned}$$

$$\begin{aligned}
 \text{b) } & \frac{5^3 \cdot 125^4}{25^6} = \frac{5^3 \cdot (5^3)^4}{(5^2)^6} = 1t \\
 & = \frac{5^3 \cdot 5^{12}}{5^{12}} = 5^3 = \underline{\underline{125}} \quad 1t
 \end{aligned}$$

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