ALGEBARSKI IZRAZI

Rečić, Barunović, Sičić, Peher 1.c

/19 bodovi

1. $\left(\frac{1}{6}x - \frac{1}{2}y^2z^3\right)^2 = \left(\frac{1}{6}x\right)^2 - 2\cdot\frac{1}{6}x\cdot\frac{1}{2}y^2z^3 + \left(\frac{1}{2}y^2z^3\right)^2$

$= \frac{1}{36}x^2 - \frac{1}{9}xy^2z^3 + \frac{1}{9}y^4z^6$ (+1)

1

2. $(x-1)(x-3) = 5 \longrightarrow x^2 - 3x - x + 3 = 5$

$x^2 - 4x + 3 = 5$

$x^2 - 4x = 5 - 3$ (+1)

$x^2 - 4x = 2$

$(x-2)^2 = ?$

$\hookrightarrow x^2 - 2\cdot x\cdot 2 + 2^2$

$= x^2 - 4x + 4$

$= 2 + 4$ (+1)

$= 6$

2

3. $27^m + 3\cdot 18^m + 3\cdot 12^m + 8^m = (3^3)^m + (2^3)^m = (3^m + 2^m)^3$ (+1)

1

4. $a^2 - b^2 = 15 \longrightarrow (a-b)(a+b) = 15$

$a - b = 9$

$9(a+b) = 15$ (+1)

$a + b = \frac{15}{9}$

$a + b = \frac{5}{3}$

$1 - 3a - 3b = ?$

$= 1 - 3(a+b)$

$= 1 - 3^1\cdot\frac{5}{3_1}$ (+1)

$= 1 - 5$

$= -4$

2

5. $(a^2+b^2)^2 - 4a^2b^2 = a^4 + 2a^2b^2 + b^4 - 4a^2b^2$ +1

$= a^4 - 2a^2b^2 + b^4$

$= (a^2-b^2)^2$ +1

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

$= (a-b)^2(a+b)^2$ +1

3

6. $\left(\frac{2}{3}ab - \frac{3}{4}cd\right)^3 = \left(\frac{2}{3}ab\right)^3 - 3\cdot\left(\frac{2}{3}ab\right)^2\cdot\frac{3}{4}cd + 3\cdot\frac{2}{3}ab\cdot\left(\frac{3}{4}cd\right)^2 - \left(\frac{3}{4}cd\right)^3$

$= \frac{8}{27}a^3b^3 - a^2b^2cd + \frac{9}{8}abc^2d^2 - \frac{27}{64}c^3d^3$ +1

1

7 $(a+e+c)(a-e-c) = (a+(e+c))(a-(e+c)) = a^2 - (e^2+c^2) = a^2 - e^2 - 2ec - c^2$

8. $\frac{1}{6a-4} + \frac{a-1}{3a^2-2a} = \frac{1}{2(3a-2)} + \frac{a-1}{a(3a-2)}$ +1 $= \frac{a+2a-2}{2a(3a-2)}$ +1

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

4

9. $\frac{x+2}{2x-4} + \frac{2-x}{3x+6} + \frac{5x^3+8}{24-6x^2} = \frac{x+2}{2(x-2)} + \frac{2-x}{3(x-2)} + \frac{5x^3+8}{6(4-x^2)}$

$= \frac{x+2}{2(x-2)} + \frac{2-x}{3(x-2)} + \frac{5x^3+8}{-6(x-2)(x+2)}$ +1 $= \frac{3(x+2)^2 + 2(x-2)(2-x) - 5x^3 - 8}{6(x-2)(x+2)}$ +1

$= \frac{3x^2 + 12x + 12 - 2x^2 + 3x + 3 - 5x^3 + 8}{6(x-2)(x+2)} = \frac{-5x^3 + x^2 + 20x - 4}{6(x-2)(x+2)}$

$= \frac{5x(4-x)^2 + x^2 - 4}{6(x-2)(x+2)} = \frac{-5x(x^2-4) + x^2 - 4}{6(x-2)(x+2)}$ +1 $= \frac{(x^2-4)(1-5x)}{6(x^2-4)}$

+1

$= \frac{1-5x}{6}$ +1

5