

19 bodova

1. Kvadriraj:

$$\begin{aligned} a) (7a+3b)^2 \\ &= (7a)^2 + 2 \cdot 7a \cdot 3b + (3b)^2 \quad (+1) \\ &= 49a^2 + 42ab + 9b^2 \end{aligned}$$

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

$$\begin{aligned} c) (2a-3)(2a+3) \quad (+1) \\ &= 4a^2 - 9 \end{aligned}$$

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

$$a+b=3$$

$$ab=-1$$

$$a^2+b^2=?$$

$$\begin{aligned} (a+b)^2 &= a^2 + 2ab + b^2 \\ &= (a+b)^2 - 2ab \quad (+1) \\ &= 3^2 - 2 \cdot (-1) \end{aligned}$$

$$= 9 + 2$$

$$= 11 \quad (+1)$$

$$3. a) \frac{1}{x} - \frac{1}{xy} + \frac{1}{y} = \frac{y-1+x}{xy} \quad (+1)$$

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

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

4. 2 računaĳ

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

$$= (x+1)^4 - (x^2 - 1)^2 \quad (+1)$$

$$= (x+1)^4 - (x-1)^2 (x+1)^2 \quad (+1)$$

$$= (x+1)^2 [(x+1 - (x-1))(x+1 + x-1)] \quad (+1)$$

$$= (x+1)^2 [(x+1 - x + 1)(x+1 + x - 1)] \quad (+1)$$

$$= (x+1)^2 (2 \cdot 2x)$$

$$= (x+1)^2 \cdot 4x \quad (+1)$$

5 2 računaĳ

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

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

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

$$= \frac{-2x^2 + 8}{x(x+2)(x-2)} = \frac{-2(x^2 - 4)}{x(x+2)(x-2)} = \frac{-2(x+2)(x-2)}{x(x+2)(x-2)}$$

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

## 6. Pojednostavi

$$\frac{4a^2 - 6a}{4a^2 - 9} = \frac{2a(2a-3)}{(2a-3)(2a+3)} = \frac{2a}{2a+3} \quad (+1)$$

$$7. \text{ a) } \left(\frac{1}{2}a + b\right)^2 = \left(\frac{1}{2}a\right)^2 + ab + b^2 = \frac{1}{4}a^2 + ab + b^2 \quad (+1)$$

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

