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BODOVI: /24

1.

$2a(3a-5b)+2b(2a-3b)-6a(a-b)$

$= 6a^2 - 10ab + 4ab - 6b^2 - 6a^2 + 6ab$

$= -6b^2$ (+1)

2.

$(x-2y)(x+2y)-(2x-y)(2x+y)$

$= x^2 + 2xy - 2xy - 4y^2 - (4x^2 - 2xy - 2xy - y^2)$

$= x^2 - 4y^2 - 4x^2 + y^2$

$= -3x^2 - 3y^2$

$= -3(x^2 + y^2)$ (+1)

3.

$(3a+2b)^2$

$(3a)^2 + 12ab + (2b)^2$

$= 9a^2 + 12ab + 4b^2$ (+1)

4.

$2a(3a-2b)^2 + 6b(2a-3b)^2$

$= 2a(9a^2 - 12ab - 4b^2) + 6b(4a^2 - 12ab - 9b)^2$ (+1)

$= 18a^3 - 24a^2b - 8ab^2 + 24a^2b - 72ab^2 - 54b^3$

$= 18a^3 - 8ab^2 - 72ab^2 - 54b^3$

$= 18a^3 - 64ab^2 - 54b^3$ (+1)

5.

$(2a+3b)^2 - 24ab = 4a^2 + 2 \cdot 2a \cdot 3b + 9b^2 - 24ab$

$= 4a^2 + 12ab + 9ab^2 - 24ab$

$= 4a^2 - 12ab + 9b^2$

$= (2a-3b)^2$ (+1)

6.

$\dfrac{a^2-4}{2a^2-4a} = \dfrac{(a-2)(a+2)}{2a(a-2)} = \dfrac{a+2}{2a}$

          (+1)   (+1)

7.

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

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

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

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

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

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

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

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

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

8.

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

$$(3a^2b-4c^3)^3 = (3a^2b)^3 - 3\cdot(3a^2b)^2\cdot4c^3 + 3\cdot 3a^2b\cdot(4c^3)^2 - (4c^3)^3$$

$$= 27a^6b^3 - 108a^4b^2c^3 + 144a^2bc^3 - 64c^9 \quad \text{(+1)}$$

10.

$$(a^2b^2-5)^3 = (a^2b^2)^3 - 3\cdot(a^2b^2)^2\cdot5 + 3\cdot(a^2b^2)\cdot25 - 125$$

$$= a^6b^6 - 15a^4b^4 + 75a^2b^2 - 125 \quad \text{(+1)}$$

11.

$$x^6y^2 + 2x^4y^4 + x^2y^6$$

$$= x^2y^2(x^4 + 2x^2y^2 + y^4) \quad \text{(+1)}$$

$$= x^2y^2(x^2 + y^2)^2 \quad \text{(+1)}$$

12.

$$\left(a - \frac{a^2+4}{4}\right) \cdot \frac{8}{4-a^2} = \frac{4a-(a^2+4)}{4} \cdot \frac{8}{(2-a)(2+a)} \quad \text{(+1)}$$

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

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

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

$$= (a-2)^2 \cdot \frac{2}{(a-2)(a+2)}$$

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

13.

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

$$= \frac{(b-c)(b+c)+(a-b)(a+b)}{(a-b)(a+b)(b-c)(b+c)} \quad \text{(+1)}$$

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

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

$$= \frac{(a-c)(a+c)}{(a-b)(a+b)(b-c)(b+c)} \quad \text{(+1)}$$