Sympy extension

simplify

$$e1 = v1 + v1 + v2 + v3 + v2 + v3 - v4 \qquad e1 = (-v4) + 2 \cdot v1 + 2 \cdot v2 + 2 \cdot v3$$

$$e1 = (-v4) + 2 \cdot v1 + 2 \cdot v2 + 2 \cdot v3$$

$$e2 = \sin x^2 + \cos x^2 \qquad e2 = 1 = 1 \ = 1$$

$$e3 = \frac{x^3 + x^2 - x - 1}{x^2 + 2 \cdot x + 1} \qquad e3 = -1 + x$$

expand

$$e1 = x + 1^2 \qquad e1 = 1 + 2 \cdot x + x^2$$

$$e2 = x + 2 \cdot x - 3 \qquad e2 = -6 + (-x) + x^2$$

$$e3 = x + 1 \cdot x - 2 - x - 1 \cdot x \qquad e3 = -2 = (-2) \ = (-2)$$

factor

$$e1 = x^3 - x^2 + x - 1 \qquad e1 = \left(1 + x^2\right) \cdot (-1 + x)$$

$$e2 = x^2 \cdot z + 4 \cdot x \cdot y \cdot z + 4 \cdot y^2 \cdot z \qquad e2 = z \cdot 2 \cdot y + x^2$$

collect

$$e1 = x \cdot y + x - 3 + 2 \cdot x^2 - z \cdot x^2 + x^3 \qquad e1 = -3 + x^3 + x \cdot (1 + y) + x^2 \cdot (2 - z)$$

cancel

$$e1 = \frac{x^2 + 2 \cdot x + 1}{x^2 + x} \qquad e1 = \frac{1}{x} \cdot (1 + x)$$

$$e2 = \frac{1}{x} + \frac{\frac{3 \cdot x}{2} - 2}{x - 4} \qquad e2 = \frac{1}{2 \cdot x^2 + -8 \cdot x} \cdot \left(-8 + -2 \cdot x + 3 \cdot x^2\right)$$

$$e3 = \frac{x \cdot y^2 - 2 \cdot x \cdot y \cdot z + x \cdot z^2 + y^2 - 2 \cdot y \cdot z + z^2}{x^2 - 1} \qquad e3 = \frac{1}{-1 + x} \cdot \left(z^2 + -2 \cdot y \cdot z + y^2\right)$$

apart

$$e1 = \frac{4 \cdot x^3 + 21 \cdot x^2 + 10 \cdot x + 12}{x^4 + 5 \cdot x^3 + 5 \cdot x^2 + 4 \cdot x} \qquad e1 = \frac{1}{1 + x + x^2} \cdot (-1 + 2 \cdot x) + \left(-\frac{1}{4 + x}\right) + 3 \cdot \frac{1}{x}$$

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