1. Stegreifaufgabe aus der Mathematik

Klasse 10

- Lösungen -

1a) $x^{2n+3} - x^3y^8 = x^{2n} \cdot x^3 - x^3 \cdot y^8 = \underline{\underline{x^3\left(x^{2n} - y^8\right)}}$

1b) $x^{n-2} - 4x^{n-1} + 4x^n = \frac{x^n}{x^2} - 4\frac{x^n}{x} + 4x^n = \frac{x^n}{x^2}\left(1 - 4x + 4x^2\right) =$

$x^{n-2}\left(1 - 4x + 4x^2\right) = \underline{\underline{x^{n-2}(1-2x)^2}}$

2.

$$\frac{x}{x^{n-1} \cdot y^{n-1}} - \frac{y^{n+1}}{x^{n-2} \cdot y^{2n}} + \frac{1}{x^n \cdot y^n} =$$

$$\frac{x}{\frac{x^n}{x} \cdot \frac{y^n}{y}} - \frac{y^n \cdot y}{\frac{x^n}{x^2} \cdot y^n \cdot y^n} + \frac{1}{x^n y^n} =$$

$$\frac{x^2 \cdot y}{x^n \cdot y^n} - \frac{y^n \cdot y \cdot x^2}{x^n \cdot y^n \cdot y^n} + \frac{1}{x^n y^n} =$$

$$\frac{x^2 \cdot y}{x^n \cdot y^n} - \frac{y \cdot x^2}{x^n \cdot y^n} + \frac{1}{x^n y^n} =$$

$$\frac{x^2 \cdot y - x^2 \cdot y + 1}{x^n y^n} = \underline{\underline{\frac{1}{x^n y^n}}}$$

3.

$$\frac{z^n}{(xy)^k} : \left[\left(\frac{y^{k-1}}{z^{n+2} \cdot x^{3k+2}}\right)^3 \cdot \left(\frac{z^{2n+3} \cdot x^{4k+3}}{y^{2k}}\right)^2\right] =$$

$$\frac{z^n}{x^k \cdot y^k} : \left(\frac{y^{3k-3}}{z^{3n+6} \cdot x^{9k+6}} \cdot \frac{z^{4n+6} \cdot x^{8k+6}}{y^{4k}}\right) =$$

$$\frac{z^n}{x^k \cdot y^k} : \frac{x^{8k+6} \cdot y^{3k-3} \cdot z^{4n+6}}{x^{9k+6} \cdot y^{4k} \cdot z^{3n+6}} =$$

$$\frac{z^n}{x^k \cdot y^k} : \frac{z^n}{x^k \cdot y^{k+3}} =$$

$$\frac{x^k \cdot y^{k+3} \cdot z^n}{x^k \cdot y^k \cdot z^n} =$$

$$\frac{y^{k+3}}{y^k} = \underline{\underline{y^3}}$$