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Potenser

27. juni 2017

Eksempel 1

Reducer udtrykket

$$(3 \cdot a)^2$$

$$\begin{aligned}
x^s \cdot x^t &= x^{s+t} \\
\frac{x^s}{x^t} &= x^{s-t} \\
\left(x^s\right)^t &= x^{s \cdot t} \\
(x \cdot y)^s &= x^s \cdot y^s \\
\left(\frac{x}{y}\right)^s &= \frac{x^s}{y^s} \\
x^0 &= 1 \\
x^{-s} &= \frac{1}{x^s} \\
\sqrt[s]{x} &= x^{\frac{1}{s}} \text{ , hvor } x > 0 \\
\sqrt[s]{x^t} &= x^{\frac{t}{s}} \text{ , hvor } x > 0
\end{aligned}$$

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Eksempel 1

Reducer udtrykket

$$(3 \cdot a)^2$$

$$(3 \cdot a)^2 = 3^2 \cdot a^2$$

$$\begin{aligned}
x^s \cdot x^t &= x^{s+t} \\
\frac{x^s}{x^t} &= x^{s-t} \\
\left(x^s\right)^t &= x^{s \cdot t} \\
(x \cdot y)^s &= x^s \cdot y^s \\
\left(\frac{x}{y}\right)^s &= \frac{x^s}{y^s} \\
x^0 &= 1 \\
x^{-s} &= \frac{1}{x^s} \\
\sqrt[s]{x} &= x^{\frac{1}{s}} \text{ , hvor } x > 0 \\
\sqrt[s]{x^t} &= x^{\frac{t}{s}} \text{ , hvor } x > 0
\end{aligned}$$

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Eksempel 1

Reducer udtrykket

$$(3 \cdot a)^2$$

$$\begin{aligned}(3 \cdot a)^2 &= 3^2 \cdot a^2 \\ &= 9 \cdot a^2\end{aligned}$$

$$\begin{aligned}x^s \cdot x^t &= x^{s+t} \\ \frac{x^s}{x^t} &= x^{s-t} \\ (x^s)^t &= x^{s \cdot t} \\ (x \cdot y)^s &= x^s \cdot y^s \\ \left(\frac{x}{y}\right)^s &= \frac{x^s}{y^s} \\ x^0 &= 1 \\ x^{-s} &= \frac{1}{x^s} \\ \sqrt[s]{x} &= x^{\frac{1}{s}} \text{ , hvor } x > 0 \\ \sqrt[s]{x^t} &= x^{\frac{t}{s}} \text{ , hvor } x > 0\end{aligned}$$

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Eksempel 2

Reducer udtrykket

$$\left(3x^2\right)^2$$

$$\begin{aligned}
x^s \cdot x^t &= x^{s+t} \\
\frac{x^s}{x^t} &= x^{s-t} \\
\left(x^s\right)^t &= x^{s\cdot t} \\
(x \cdot y)^s &= x^s \cdot y^s \\
\left(\frac{x}{y}\right)^s &= \frac{x^s}{y^s} \\
x^0 &= 1 \\
x^{-s} &= \frac{1}{x^s} \\
\sqrt[s]{x} &= x^{\frac{1}{s}} \text{ , hvor } x > 0 \\
\sqrt[s]{x^t} &= x^{\frac{t}{s}} \text{ , hvor } x > 0
\end{aligned}$$

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Eksempel 2

Reducer udtrykket

$$\left(3x^2\right)^2$$

$$\left(3x^2\right)^2 = 3^2 \cdot \left(x^2\right)^2$$

$$\begin{aligned}
x^s \cdot x^t &= x^{s+t} \\
\frac{x^s}{x^t} &= x^{s-t} \\
\left(x^s\right)^t &= x^{s \cdot t} \\
(x \cdot y)^s &= x^s \cdot y^s \\
\left(\frac{x}{y}\right)^s &= \frac{x^s}{y^s} \\
x^0 &= 1 \\
x^{-s} &= \frac{1}{x^s} \\
\sqrt[s]{x} &= x^{\frac{1}{s}} \text{ , hvor } x > 0 \\
\sqrt[s]{x^t} &= x^{\frac{t}{s}} \text{ , hvor } x > 0
\end{aligned}$$

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Eksempel 2

Reducer udtrykket

$$\left(3x^2\right)^2$$

$$\begin{aligned}\left(3x^2\right)^2 &= 3^2 \cdot \left(x^2\right)^2 \\ &= 9 \cdot x^{2\cdot 2}\end{aligned}$$

$$\begin{aligned}x^s \cdot x^t &= x^{s+t} \\ \frac{x^s}{x^t} &= x^{s-t} \\ \left(x^s\right)^t &= x^{s\cdot t} \\ (x \cdot y)^s &= x^s \cdot y^s \\ \left(\frac{x}{y}\right)^s &= \frac{x^s}{y^s} \\ x^0 &= 1 \\ x^{-s} &= \frac{1}{x^s} \\ \sqrt[s]{x} &= x^{\frac{1}{s}} \text{ , hvor } x > 0 \\ \sqrt[s]{x^t} &= x^{\frac{t}{s}} \text{ , hvor } x > 0\end{aligned}$$

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Eksempel 2

Reducer udtrykket

$$\left(3x^2\right)^2$$

$$\begin{aligned}\left(3x^2\right)^2 &= 3^2 \cdot \left(x^2\right)^2 \\ &= 9 \cdot x^{2\cdot 2} \\ &= 9 \cdot x^4\end{aligned}$$

$$\begin{aligned}x^s \cdot x^t &= x^{s+t} \\ \frac{x^s}{x^t} &= x^{s-t} \\ \left(x^s\right)^t &= x^{s\cdot t} \\ (x \cdot y)^s &= x^s \cdot y^s \\ \left(\frac{x}{y}\right)^s &= \frac{x^s}{y^s} \\ x^0 &= 1 \\ x^{-s} &= \frac{1}{x^s} \\ \sqrt[s]{x} &= x^{\frac{1}{s}} \text{ , hvor } x > 0 \\ \sqrt[s]{x^t} &= x^{\frac{t}{s}} \text{ , hvor } x > 0\end{aligned}$$

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Eksempel 3

Reducer udtrykket

$$\left(\frac{2}{x}\right)^3 \cdot x^2$$

$$\begin{aligned}
x^s \cdot x^t &= x^{s+t} \\
\frac{x^s}{x^t} &= x^{s-t} \\
\left(x^s\right)^t &= x^{s \cdot t} \\
(x \cdot y)^s &= x^s \cdot y^s \\
\left(\frac{x}{y}\right)^s &= \frac{x^s}{y^s} \\
x^0 &= 1 \\
x^{-s} &= \frac{1}{x^s} \\
\sqrt[s]{x} &= x^{\frac{1}{s}} \text{, hvor } x > 0 \\
\sqrt[s]{x^t} &= x^{\frac{t}{s}} \text{, hvor } x > 0
\end{aligned}$$

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Eksempel 3

Reducer udtrykket

$$\left(\frac{2}{x}\right)^3 \cdot x^2$$

$$\left(\frac{2}{x}\right)^3 \cdot x^2 = \frac{2^3}{x^3} \cdot x^2$$

$$\begin{aligned}
x^s \cdot x^t &= x^{s+t} \\
\frac{x^s}{x^t} &= x^{s-t} \\
\left(x^s\right)^t &= x^{s \cdot t} \\
(x \cdot y)^s &= x^s \cdot y^s \\
\left(\frac{x}{y}\right)^s &= \frac{x^s}{y^s} \\
x^0 &= 1 \\
x^{-s} &= \frac{1}{x^s} \\
\sqrt[s]{x} &= x^{\frac{1}{s}} \text{, hvor } x > 0 \\
\sqrt[s]{x^t} &= x^{\frac{t}{s}} \text{, hvor } x > 0
\end{aligned}$$

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Eksempel 3

Reducer udtrykket

$$\left(\frac{2}{x}\right)^3 \cdot x^2$$

$$\begin{aligned}\left(\frac{2}{x}\right)^3 \cdot x^2 &= \frac{2^3}{x^3} \cdot x^2 \\ &= \frac{8}{x^3} \cdot x^2\end{aligned}$$

$$\begin{aligned}x^s \cdot x^t &= x^{s+t} \\ \frac{x^s}{x^t} &= x^{s-t} \\ \left(x^s\right)^t &= x^{s \cdot t} \\ (x \cdot y)^s &= x^s \cdot y^s \\ \left(\frac{x}{y}\right)^s &= \frac{x^s}{y^s} \\ x^0 &= 1 \\ x^{-s} &= \frac{1}{x^s} \\ \sqrt[s]{x} &= x^{\frac{1}{s}} \text{, hvor } x > 0 \\ \sqrt[s]{x^t} &= x^{\frac{t}{s}} \text{, hvor } x > 0\end{aligned}$$

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Eksempel 3

Reducer udtrykket

$$\left(\frac{2}{x}\right)^3 \cdot x^2$$

$$\begin{aligned}\left(\frac{2}{x}\right)^3 \cdot x^2 &= \frac{2^3}{x^3} \cdot x^2 \\ &= \frac{8}{x^3} \cdot x^2 \\ &= \frac{8 \cdot x^2}{x^3}\end{aligned}$$

$$\begin{aligned}x^s \cdot x^t &= x^{s+t} \\ \frac{x^s}{x^t} &= x^{s-t} \\ \left(x^s\right)^t &= x^{s \cdot t} \\ (x \cdot y)^s &= x^s \cdot y^s \\ \left(\frac{x}{y}\right)^s &= \frac{x^s}{y^s} \\ x^0 &= 1 \\ x^{-s} &= \frac{1}{x^s} \\ \sqrt[s]{x} &= x^{\frac{1}{s}} \text{, hvor } x > 0 \\ \sqrt[s]{x^t} &= x^{\frac{t}{s}} \text{, hvor } x > 0\end{aligned}$$

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Eksempel 3

Reducer udtrykket

$$\left(\frac{2}{x}\right)^3 \cdot x^2$$

$$\begin{aligned}\left(\frac{2}{x}\right)^3 \cdot x^2 &= \frac{2^3}{x^3} \cdot x^2 \\ &= \frac{8}{x^3} \cdot x^2 \\ &= \frac{8 \cdot x^2}{x^3} \\ &= 8 \cdot x^{2-3}\end{aligned}$$

$$\begin{aligned}x^s \cdot x^t &= x^{s+t} \\ \frac{x^s}{x^t} &= x^{s-t} \\ \left(x^s\right)^t &= x^{s \cdot t} \\ (x \cdot y)^s &= x^s \cdot y^s \\ \left(\frac{x}{y}\right)^s &= \frac{x^s}{y^s} \\ x^0 &= 1 \\ x^{-s} &= \frac{1}{x^s} \\ \sqrt[s]{x} &= x^{\frac{1}{s}}, \text{ hvor } x > 0 \\ \sqrt[s]{x^t} &= x^{\frac{t}{s}}, \text{ hvor } x > 0\end{aligned}$$

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Eksempel 3

Reducer udtrykket

$$\left(\frac{2}{x}\right)^3 \cdot x^2$$

$$\begin{aligned}
\left(\frac{2}{x}\right)^3 \cdot x^2 &= \frac{2^3}{x^3} \cdot x^2 \\
&= \frac{8}{x^3} \cdot x^2 \\
&= \frac{8 \cdot x^2}{x^3} \\
&= 8 \cdot x^{2-3} \\
&= 8 \cdot x^{-1}
\end{aligned}$$

$$\begin{aligned}
x^s \cdot x^t &= x^{s+t} \\
\frac{x^s}{x^t} &= x^{s-t} \\
\left(x^s\right)^t &= x^{s \cdot t} \\
(x \cdot y)^s &= x^s \cdot y^s \\
\left(\frac{x}{y}\right)^s &= \frac{x^s}{y^s} \\
x^0 &= 1 \\
x^{-s} &= \frac{1}{x^s} \\
\sqrt[s]{x} &= x^{\frac{1}{s}} \text{, hvor } x > 0 \\
\sqrt[s]{x^t} &= x^{\frac{t}{s}} \text{, hvor } x > 0
\end{aligned}$$

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Eksempel 4

Reducer udtrykket

$$x^3 \cdot \sqrt[2]{x^3}$$

$$\begin{aligned}
x^s \cdot x^t &= x^{s+t} \\
\frac{x^s}{x^t} &= x^{s-t} \\
(x^s)^t &= x^{s \cdot t} \\
(x \cdot y)^s &= x^s \cdot y^s \\
\left(\frac{x}{y}\right)^s &= \frac{x^s}{y^s} \\
x^0 &= 1 \\
x^{-s} &= \frac{1}{x^s} \\
\sqrt[s]{x} &= x^{\frac{1}{s}} \text{ , hvor } x > 0 \\
\sqrt[s]{x^t} &= x^{\frac{t}{s}} \text{ , hvor } x > 0
\end{aligned}$$

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Eksempel 4

Reducer udtrykket

$$x^3 \cdot \sqrt[2]{x^3}$$

$$x^3 \cdot \sqrt[2]{x^3} = x^3 \cdot x^{\frac{3}{2}}$$

$$\begin{aligned}
x^s \cdot x^t &= x^{s+t} \\
\frac{x^s}{x^t} &= x^{s-t} \\
(x^s)^t &= x^{s \cdot t} \\
(x \cdot y)^s &= x^s \cdot y^s \\
\left(\frac{x}{y}\right)^s &= \frac{x^s}{y^s} \\
x^0 &= 1 \\
x^{-s} &= \frac{1}{x^s} \\
\sqrt[s]{x} &= x^{\frac{1}{s}} \text{ , hvor } x > 0 \\
\sqrt[s]{x^t} &= x^{\frac{t}{s}} \text{ , hvor } x > 0
\end{aligned}$$

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Eksempel 4

Reducer udtrykket

$$x^3 \cdot \sqrt[2]{x^3}$$

$$\begin{aligned} x^3 \cdot \sqrt[2]{x^3} &= x^3 \cdot x^{\frac{3}{2}} \\ &= x^{\frac{3}{2}+3} \end{aligned}$$

$$\begin{aligned} x^s \cdot x^t &= x^{s+t} \\ \frac{x^s}{x^t} &= x^{s-t} \\ (x^s)^t &= x^{s \cdot t} \\ (x \cdot y)^s &= x^s \cdot y^s \\ \left(\frac{x}{y}\right)^s &= \frac{x^s}{y^s} \\ x^0 &= 1 \\ x^{-s} &= \frac{1}{x^s} \\ \sqrt[s]{x} &= x^{\frac{1}{s}} \text{ , hvor } x > 0 \\ \sqrt[s]{x^t} &= x^{\frac{t}{s}} \text{ , hvor } x > 0 \end{aligned}$$

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Reducer udtrykket

$$x^3 \cdot \sqrt[2]{x^3}$$

$$\begin{aligned} x^3 \cdot \sqrt[2]{x^3} &= x^3 \cdot x^{\frac{3}{2}} \\ &= x^{\frac{3}{2}+3} \\ &= x^{\frac{3}{2}+\frac{6}{2}} \end{aligned}$$

$$\begin{aligned} x^s \cdot x^t &= x^{s+t} \\ \frac{x^s}{x^t} &= x^{s-t} \\ (x^s)^t &= x^{s \cdot t} \\ (x \cdot y)^s &= x^s \cdot y^s \\ \left(\frac{x}{y}\right)^s &= \frac{x^s}{y^s} \\ x^0 &= 1 \\ x^{-s} &= \frac{1}{x^s} \\ \sqrt[s]{x} &= x^{\frac{1}{s}} \text{ , hvor } x > 0 \\ \sqrt[s]{x^t} &= x^{\frac{t}{s}} \text{ , hvor } x > 0 \end{aligned}$$

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Reducer udtrykket

$$x^3 \cdot \sqrt[2]{x^3}$$

$$\begin{aligned} x^3 \cdot \sqrt[2]{x^3} &= x^3 \cdot x^{\frac{3}{2}} \\ &= x^{\frac{3}{2}+3} \\ &= x^{\frac{3}{2}+\frac{6}{2}} \\ &= x^{\frac{3+6}{2}} \end{aligned}$$

$$\begin{aligned} x^s \cdot x^t &= x^{s+t} \\ \frac{x^s}{x^t} &= x^{s-t} \\ (x^s)^t &= x^{s \cdot t} \\ (x \cdot y)^s &= x^s \cdot y^s \\ \left(\frac{x}{y}\right)^s &= \frac{x^s}{y^s} \\ x^0 &= 1 \\ x^{-s} &= \frac{1}{x^s} \\ \sqrt[s]{x} &= x^{\frac{1}{s}} \text{ , hvor } x > 0 \\ \sqrt[s]{x^t} &= x^{\frac{t}{s}} \text{ , hvor } x > 0 \end{aligned}$$

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Eksempel 4

Reducer udtrykket

$$x^3 \cdot \sqrt[2]{x^3}$$

$$\begin{aligned} x^3 \cdot \sqrt[2]{x^3} &= x^3 \cdot x^{\frac{3}{2}} \\ &= x^{\frac{3}{2}+3} \\ &= x^{\frac{3}{2}+\frac{6}{2}} \\ &= x^{\frac{3+6}{2}} \\ &= x^{\frac{9}{2}} \end{aligned}$$

$$\begin{aligned} x^s \cdot x^t &= x^{s+t} \\ \frac{x^s}{x^t} &= x^{s-t} \\ (x^s)^t &= x^{s \cdot t} \\ (x \cdot y)^s &= x^s \cdot y^s \\ \left(\frac{x}{y}\right)^s &= \frac{x^s}{y^s} \\ x^0 &= 1 \\ x^{-s} &= \frac{1}{x^s} \\ \sqrt[s]{x} &= x^{\frac{1}{s}} \text{ , hvor } x > 0 \\ \sqrt[s]{x^t} &= x^{\frac{t}{s}} \text{ , hvor } x > 0 \end{aligned}$$

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Eksempel 4

Reducer udtrykket

$$x^3 \cdot \sqrt[2]{x^3}$$

$$\begin{aligned} x^3 \cdot \sqrt[2]{x^3} &= x^3 \cdot x^{\frac{3}{2}} \\ &= x^{\frac{3}{2}+3} \\ &= x^{\frac{3}{2}+\frac{6}{2}} \\ &= x^{\frac{3+6}{2}} \\ &= x^{\frac{9}{2}} \\ &= \sqrt[2]{x^9} \end{aligned}$$

$$\begin{aligned} x^s \cdot x^t &= x^{s+t} \\ \frac{x^s}{x^t} &= x^{s-t} \\ (x^s)^t &= x^{s \cdot t} \\ (x \cdot y)^s &= x^s \cdot y^s \\ \left(\frac{x}{y}\right)^s &= \frac{x^s}{y^s} \\ x^0 &= 1 \\ x^{-s} &= \frac{1}{x^s} \\ \sqrt[s]{x} &= x^{\frac{1}{s}} \text{ , hvor } x > 0 \\ \sqrt[s]{x^t} &= x^{\frac{t}{s}} \text{ , hvor } x > 0 \end{aligned}$$