Laws of indices

Study Development Worksheet

## Example

Simplify $x^{3}÷ x^{\frac{2}{3}}$.

## Answer

## $$x^{3}÷x^{\frac{2}{3}}=x^{\left(3-\frac{2}{3}\right)}=x^{\frac{7}{3}} \left(=\sqrt[3]{x^{7}}\right)$$

## Questions

Simplify:

1. $x^{2}×x^{5}$
2. $y^{3}×y^{\frac{1}{3}}$
3. $a^{4}÷a^{2}$
4. $b^{6}×b^{2}÷b^{3}$
5. $\left(c^{-1}\right)^{3}$
6. $d^{-\frac{1}{2}}×d^{\frac{1}{2}}$
7. $\left(z^{-2}\right)^{-\frac{1}{2}}$

Laws of indices

Study Development Worksheet

## Answers

1. $x^{2}×x^{5}=x^{\left(2+5\right)}=x^{7}$
2. $y^{3}×y^{\frac{1}{3}}=y^{\left(3+\frac{1}{3}\right)}=y^{\frac{10}{3}}\left(=\sqrt[3]{y^{10}}\right)$
3. $a^{4}÷a^{2}=a^{4-2}=a^{2}$
4. $b^{6}×b^{2}÷b^{3}=b^{\left(6+2-3\right)}=b^{5}$
5. $\left(c^{-1}\right)^{3}=c^{\left(-1\right)×3}=c^{-3}\left(=\frac{1}{c^{3}}\right)$
6. $d^{-\frac{1}{2}}×d^{\frac{1}{2}}=d^{\left(-\frac{1}{2}+\frac{1}{2}\right)}=d^{0}=1$
7. $\left(z^{-2}\right)^{-\frac{1}{2}}=z^{\left(-2\right)×\left(-\frac{1}{2}\right)}=z^{1}=z$

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