Laws of Indices IGCSE Mathematics 0580

Rule	Example
1. $a^m \times a^n = a^{m+n}$	$2^5 \times 2^3 = 2^8$
2. $\frac{a^m}{a^n} = a^{m-n}$	$5^7 \div 5^3 = 5^4$
3. $(a^m)^n = a^{mn}$	$(10^3)^7 = 10^{21}$
4. $a^n \times b^n = (ab)^n$	$5^2 \times 20^2 = 100^2$
5. $\frac{a^n}{b^n} = \left(\frac{a}{b}\right)^n$	$\frac{3^2}{9^2} = \left(\frac{1}{3}\right)^2$
6. $a^0 = 1$	$34^0 = 1$
7. $a^{-n} = \frac{1}{a^n}$	$9^{-2} = \frac{1}{81}$
8. $a^{\frac{1}{n}} = \sqrt[n]{a}$	$49^{\frac{1}{2}} = \sqrt[2]{49} = 7$
9. $a^{\frac{m}{n}} = (\sqrt[n]{a})^m = \sqrt[n]{a^m}$	$8^{\frac{2}{3}} = (\sqrt[3]{8})^2 = \sqrt[3]{8^2} = 4$
10. $a^{\frac{m}{n}} = c$, *then* $a = c^{n/m}$	$x^{2/3} = 25$, $x = 25^{3/2} = 125$

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