

(3) INDICES (Indeks)

(a) Table for Numbers Power of n (Jadual nombor kuasa)

n	-3	-2	-1	0	1	2	3	4	5	6	7
2	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	1	2	4	8	16	32	64	128
3	$\frac{1}{27}$	$\frac{1}{9}$	$\frac{1}{3}$	1	3	9	27	81	243	729	
5	$\frac{1}{125}$	$\frac{1}{25}$	$\frac{1}{5}$	1	5	25	125	625	3125		
6	$\frac{1}{216}$	$\frac{1}{36}$	$\frac{1}{6}$	1	6	36	216	1296			

$2 = 4^{\frac{1}{2}}$	$5 = 25^{\frac{1}{2}}$
$3 = 9^{\frac{1}{2}}$	$6 = 36^{\frac{1}{2}}$
$4 = 16^{\frac{1}{2}}$	$7 = 49^{\frac{1}{2}}$

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(b) Indices and Law of Indices (Hukum Indeks)

<ul style="list-style-type: none"> ▪ $a^n = a \times a \times \dots \times a$ (n times of a) (n kali huruf a) ▪ $a^0 = 1$ ▪ $a^{-n} = \frac{1}{a^n}, \quad a^n = \frac{1}{a^{-n}}$ ▪ $\left(\frac{a}{b}\right)^{-n} = \left(\frac{b}{a}\right)^n$ ▪ $\frac{1}{a^n} = \sqrt[n]{a}$ 	<ul style="list-style-type: none"> ▪ $a^{\frac{m}{n}} = \left(\sqrt[n]{a}\right)^m = \sqrt[n]{a^m}$ ▪ $a^m \times a^n = a^{m+n}$ ▪ $a^m \div a^n = \frac{a^m}{a^n} = a^{m-n}$ ▪ $(a^m)^n = (a^n)^m = a^{mn}$ ▪ $a^n \times b^n = (ab)^n, \quad \frac{a^n}{b^n} = \left(\frac{a}{b}\right)^n$ 	
<p>Example 1 :</p> $\frac{k^4 \times k}{k^{-2}} = ???$ $= k^{4+1-(-2)}$ $= k^{4+1+2}$ $= k^7$	<p>Example 2 :</p> $(3f^5g^2)^2 \times (f^4)^{-3} \div f^{-2}g^7 = ???$ $= 9f^{10}g^4 \times f^{-12} \div f^{-2}g^7$ $= 9f^{10+(-12)-(-2)}g^{4-7}$ $= 9f^{10-12+2}g^{-3}$ $= 9f^0g^{-3}$ $= 9g^{-3}$	<p>Example 3 :</p> $3^{x-1} = 81$ $3^{x-1} = 3^4$ $x-1 = 4$ $x = 4+1$ $x = 5$

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