



Manipulating powers (4)

Getting ready for A-Level Maths...

What you need...

- Your brain and attention
- A device to watch connected to internet
- A pen and paper
- Can do attitude

Manipulating powers (4)

Important rules

$$a^1 = a$$

$$a^0 = 1$$

$$a^m \times a^n = a^{m+n}$$

$$a^m \div a^n = \frac{a^m}{a^n} = a^{m-n}$$

$$(a^m)^n = a^{mn}$$

$$(ka^m)^n = k^n a^{mn}$$

$$a^{-m} = \frac{1}{a^m}$$

$$a^{\frac{1}{m}} = \sqrt[m]{a}$$

$$a^{\frac{n}{m}} = \left(\sqrt[m]{a}\right)^n$$

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My turn

Given that $5^k = 2$, find the value of 5^{k+3} .

Your turn

Given that $4^k = 3$, find the value of 4^{k+2} .

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My turn

Given that $5^k = 125$, find the value of 5^{k-2} .

Your turn

Given that $4^k = 128$, find the value of 4^{k-3} .

Manipulating powers (4)

My turn

Given that $5^k = 4$, find the value of 5^{2k} .

Your turn

Given that $4^k = 3$, find the value of 4^{3k} .

Manipulating powers (4)

My turn

Given that $5^k = 4$, find the value of 5^{2k+1} .

Your turn

Given that $4^k = 3$, find the value of 4^{3k+2} .

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My turn

Given that $5^k = 2$, find the value of 5^{3k-4} .

Your turn

Given that $4^k = 3$, find the value of 4^{2k-3} .

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My turn

Given that $5^k = 6$, find the value of 5^{2-3k} .

Exam Q

Your turn

Given that $4^k = 3$, find the value of 4^{2-5k} .

Exam Q

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My turn

Given that $3^{-n} = 0.5$, find the value of 3^{5n-1} .

Exam Q

Your turn

Given that $4^{-n} = 0.2$, find the value of 4^{2n-1} .

Exam Q

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Review Exercise

1. Given that $3^k = 4$,
find the value of 3^{k+2} .
2. Given that $2^k = 128$,
find the value of 2^{k-5} .
3. Given that $3^k = 2$,
find the value of 3^{6k} .
4. Given that $5^k = 3$,
find the value of 5^{4k+1} .
5. Given that $4^k = 5$,
find the value of 4^{2k-3} .
6. Given that $3^k = 4$,
find the value of 3^{3-4k} .
7. Given that $3^{-n} = 0.125$,
find the value of 3^{2n-1} .

Extra Practice

8. Given that $4^m = 3$ and $4^n = 5$,
find the value of 4^{m+n} .
9. Given that $8^m = 3$ and $8^n = 7$,
find the value of 8^{m-n} .
10. Given that $7^m = 4$ and $7^n = 3$,
find the value of 7^{3m+2n} .
11. Given that $3^m = 2$ and $243^n = 5$,
find the value of 3^{5n+4m} .
12. Given that $4^m = 3$ and $64^n = 7$,
find the value of 4^{6n+2m} .
13. Given that $4^n = 0.6$,
find the value of 4^{-2n} .

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Review Exercise (Answers)

- Given that $3^k = 4$,
find the value of 3^{k+2} . 36
- Given that $2^k = 128$,
find the value of 2^{k-5} . 4
- Given that $3^k = 2$,
find the value of 3^{6k} . 64
- Given that $5^k = 3$,
find the value of 5^{4k+1} . 405
- Given that $4^k = 5$,
find the value of 4^{2k-3} . $\frac{25}{64}$
- Given that $3^k = 4$,
find the value of 3^{3-4k} . $\frac{27}{256}$
- Given that $3^{-n} = 0.125$,
find the value of 3^{2n-1} . $\frac{64}{3}$

Extra Practice

- Given that $4^m = 3$ and $4^n = 5$,
find the value of 4^{m+n} . 15
- Given that $8^m = 3$ and $8^n = 7$,
find the value of 8^{m-n} . $\frac{3}{7}$
- Given that $7^m = 4$ and $7^n = 3$,
find the value of 7^{3m+2n} . 576
- Given that $3^m = 2$ and $243^n = 5$,
find the value of 3^{5n+4m} . 80
- Given that $4^m = 3$ and $64^n = 7$,
find the value of 4^{6n+2m} . 441
- Given that $4^n = 0.6$,
find the value of 4^{-2n} . $\frac{25}{9}$