
$4a^2b^3$
$(2)^4$
$(3a^2)^3$
POWERS
$-(a^2)^3$
5^3
$25^{\frac{1}{2}}$


Power
exponent
8^3
base

Exponents

- Exponents are shorthand for multiplication:
  $(5)(5) = 5^2$, $(5)(5)(5) = 5^3$.
- The "exponent" stands for however many times the term is being multiplied.

Exponent → 5^3 (3 times) $5 \times 5 \times 5 = 125$

- The term that's being multiplied is called the "base".

Base → 5^3

Write each power as a product, then evaluate.

#1

a) 3^4

$3 \times 3 \times 3 \times 3$

81

b) 5^3

$5 \times 5 \times 5$

125

c) $\left(\frac{2}{3}\right)^3 = \frac{2^3}{3^3} = \frac{8}{27}$

$\left(\frac{2}{3}\right)\left(\frac{2}{3}\right)\left(\frac{2}{3}\right)$

$= \frac{8}{27}$

Write each product as a power, then evaluate.

#2

a) $(4)(4)(4) = \boxed{4^3} = 64$ b) $(-6)(-6)(-6)(-6)(-6)$

$(-6)^5 = -7776$

Powers with a Twist

Can you see the difference?

-4^2

$-4 \times 4 = -16$

$(-4)^2$

$(-4)(-4) = 16$

THINK

$(-1)^2 =$ 1 $\quad (-1)(-1) = +1$

$(-1)^3 =$ $(-1)(-1)(-1) = -1$

$(-1)^4 =$ $(-1)(-1)(-1)(-1) = +1$

$(-1)^5 =$ $(-1)(-1)(-1)(-1)(-1) = -1$

$\vdots$

Did you see a pattern??

$(-1)^{10247} =$

$(-1)^{29584} =$

$(-1)^{10247} = -1$ $(-1)^{29584} = 1$

THINK

- Evaluating powers when the base is negative...

If the exponent is even the answer will be positive.
If the exponent is odd the answer will be negative.

Check out pages 55 and 56.

Please complete questions...

Page 55-57
7ace,8ace,9

Page 56
#11
12
13 c, d, e, i
14 predict, do not evaluate.
[redacted]
16