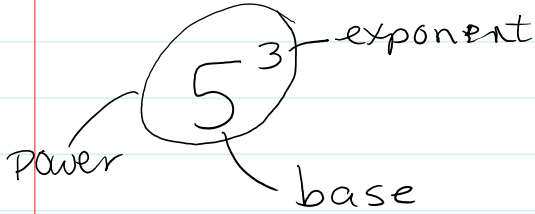


Powers

Wednesday, September 25, 2019 12:17 PM



exponential form

$$5^3 = 5 \cdot 5 \cdot 5 = 125$$

power

repeated multiplication

standard form

To evaluate a power means to write it in standard form

Write $-3 \cdot -3 \cdot -3 \cdot -3$ as a power.

$$(-3)^4 = -3 \cdot -3 \cdot -3 \cdot -3 = 81$$
$$-3^4 = -3 \cdot 3 \cdot 3 \cdot 3 = -81$$

$$\frac{3}{5} \cdot \frac{3}{5} \cdot \frac{3}{5} = \left(\frac{3}{5}\right)^3$$
$$\frac{3^3}{5} = \frac{3 \cdot 3 \cdot 3}{5}$$

Write the following as powers.

① $-4 \cdot 4 \cdot 4 = -4^3$

② $(-5)(-5)(-5)(-5) = (-5)^4$

③ $\frac{2}{7} \cdot \frac{2}{7} \cdot \frac{2}{7} \cdot \frac{2}{7} \cdot \frac{2}{7} = \left(\frac{2}{7}\right)^5$

Evaluate $(-4)^6 = 4096$

$$(-4)^5 = -1024$$

$$-1 \cdot -1 = +1$$

$$-1 \cdot -1 \cdot -1 = -1$$

$$-1 \cdot -1 \cdot -1 \cdot -1 = +1$$

When you multiply a negative^{number} by

When you multiply a negative^{number} by itself an odd number of times the answer is negative.

When you multiply a negative number by itself an even number of times the answer is positive.

$$(-\text{base})^{\text{odd}} = - \quad (-\text{base})^{\text{even}} = +$$

$$\wedge y^x$$

$$(-1)^{10} = +1 \quad (-1)^{101} = -1$$

$$3^3 = 27 \quad (-3)^3 = -27$$

$$-(-3)^4 = -81$$

$$-(-3)^4 \quad \begin{array}{l} \text{do 1st} \\ \downarrow \\ \text{means } -1 \cdot (-3)^4 \\ -1 \cdot 81 \\ -81 \end{array}$$

Evaluate:

$$\text{a) } 3^5 = 243 \quad \text{b) } (-2)^5 = -32$$

$$\text{c) } -4^2 = -16 \quad \text{d) } -(-5)^3 = -(-125) = 125$$

$$\text{e) } \left(\frac{2}{3}\right)^3 = \frac{8}{27} \quad \left(\frac{2}{3}\right)^3 = \frac{2}{3} \cdot \frac{2}{3} \cdot \frac{2}{3} = \frac{2^3}{3^3} = \frac{8}{27}$$

Write 16 as a power of 2. $= 2^{\boxed{4}} = 2^4$

Write 16 as a power of 2. $= 2^{14} = 2^4$
↳ means the base is 2

Write -81 as a power of 3. $(-3)^4 = 81$

$$\hookrightarrow -3^4 = -81$$

$$2^5 > 5^2$$
$$32 > 25$$

$$2^5 < 2^6$$

Worksheet

⑦

now	1 mon	2	3	4	5	6	7	8	9	10
1cm	2	4	8	16	32	64	128	256	512	1024
	x2	x2	x2	x2	x2	x2				

$$1 \times 2^5$$

⑧

now	20	40	60
1	x2		
		1hr	

$$8h \cdot 8 \times 3 = 24$$

$$1 \times 2^{24} = 16,777,216$$