

GRE数学

2.3 幂运算和根

M A K E I T E A S Y

2.3.1 幂相关概念

对于任何非零数字 a , $a^0=1$, 0^0 是没有意义的。

对于任何非零数字 a , $a^{-1}=\frac{1}{a}$, $a^{-2}=\frac{1}{a^2}$, $a^{-3}=\frac{1}{a^3}$, 以此类推。

$$a \times a^{-1} = a \times \frac{1}{a} = 1。$$

2.3.2 幂运算的性质

$$1. a^n \cdot a^m = a^{n+m}$$

$$2. (a^n)^m = a^{nm}$$

$$3. \frac{a^n}{a^m} = a^{n-m}$$

$$4. (ab)^n = a^n b^n$$

$$5. a^{-n} = \frac{1}{a^n}$$

$$6. \sqrt[n]{a} = a^{\frac{1}{n}}$$

2.3.2 幂运算的性质

例: If $3^x = 81$ and, $2^{x+y} = 64$ then $\frac{x}{y} =$

2.3.3 练习

1. If n is a positive odd integer and $k=n^3+2n$, what is the value of $(-1)^k - (-1)^{k+1}$?

2. Quantity A: 27^{-8}

Quantity B: 81^{-6}

3. Quantity A: $\frac{3^{-1}}{4^{-1}}$

Quantity B: $\frac{4}{3}$

4. $N=824^x$, where x is a positive integer.

Quantity A: the number of possible values the units digit of N

Quantity B: 4

5. $m = 10^{32} + 2$, when m is divided by 11, the remainder is r .

Quantity A: r

Quantity B: 3

6. Quantity A: $\sqrt[3]{270} - \sqrt[3]{10}$

Quantity B: $\sqrt[3]{80}$

7. s and t are positive integers, and $32^s = 2^t$

Quantity A: $\frac{s}{t}$

Quantity B: $\frac{1}{5}$

8. If $n=2^3$, then $n^n=$

9. x and m are positive numbers, and m is a multiple of 3.

Quantity A: $\frac{x^m}{x^3}$

Quantity B: $x^{\frac{m}{3}}$

10. Which of the following is equivalent to $\frac{x(x^2)^3}{x^2}$?

11. Which of the following is equal to $\frac{2^{x-y}}{2^{x+y}}$ for all integers x and y ?

12. If 10^x equals 0.1 percent of 10^y , where x and y are integers, which of the following must be true?

13. If t is an integer and $8m = 16^t$, which of the following expresses m in terms of t ?

14. $x > 0$ and $x \neq 1$

Quantity A: $(2x^{-4}) \cdot 3x^2$

Quantity B: $\frac{24x}{4x^2}$

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