新东方在线

GRE数学

2.3 幂运算和根

MAKE IT EASY

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 $\frac{x}{y}$ =

A. 1

B. $\frac{3}{2}$

C. 2

D. $\frac{5}{2}$

2.3.3 练习

1. $R=2^{16}\times5^{34}\times N^{50}$
N is a positive integer
Quantity A:$\sqrt{R}$
Quantity B:$\frac{R}{10}$

2. Which of the following equals to $(8)(72)^{-5}$?

A. 8^{-4}

B. 8^{-5}

C. $\frac{(72)^{-4}}{9}$

D. $\frac{(72)^{-5}}{8}$

E. $\frac{(72)^{-6}}{9}$

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

A. -2
B. -1
C. 0
D. 1
E. 2

4. Quantity A: 27^{-8}
Quantity B: 81^{-6}

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

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

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

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

Quantity B: 4

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

Quantity A: r

Quantity B: 3

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

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

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

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

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

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

A. 2^6
B. 2^{11}
C. 2^{18}
D. 2^{24}
E. 2^{27}

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

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

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

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

A. x^2

B. x^3

C. x^4

D. x^5

E. x^6

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

A. 4^{-x}
B. 4^{-y}
C. 4^{xy}
D. 4^{x}
E. 4^{y}

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

A. $y=x+2$
B. $y=x+3$
C. $x=y+3$
D. $y=1{,}000x$
E. $x=1{,}000y$

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

A. 2^4
B. 2^{t-3}
C. $2^{3(t-3)}$
D. 2^{4t-3}
E. $2^{4(t-3)}$

16. $x>0$ and $x\neq1$

Quantity A: $(2x^{-4})\cdot3x^2$

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

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Thanks

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