Evaluate and Simplify

1. $\left[7-2(4-5)+7(2)\right]-3\left[4(5-7)-(8-3)\right]$

   A. -16   B. 18   C. 32

   D. 62   E. NOTA

2. Evaluate: $x(3x-5y-7)$, when $x = 3$ and $y = -2$.

   A. -24   B. 15   C. 36

   D. 44   E. NOTA

3. Simplify: $\left(\dfrac{w^{-5}}{x^4}\right)^{-2}$

   A. $w^{10}x^8$ B. $\dfrac{w^{10}}{x^8}$ C. $\dfrac{w^7}{x^2}$

   D. w^7x^6 E. NOTA

4. Evaluate: $(-5)^{-2}(2^3)(4^{-2})(5^3)$

   A. 0.4   B. 2.5   C. 9.375

   D. 10   E. NOTA

5. Simplify in lowest terms: $\sqrt{750}$

   A. $10\sqrt{75}$ B. 27.4   C. $75\sqrt{10}$

   D. $5\sqrt{30}$ E. NOTA

6. Simplify: $(x^2-2x-7)-(-3x^2-5x+3)$

   A. $4x^2-7x-10$ B. $4x^2+3x-4$ C. $4x^2+3x-10$

   D. $4x^2-7x-4$ E. NOTA

7. $4(3+17)-3(2\times6-2)+2(2+8\div2)\times2+10$

   A. 84   B. 100   C. 338

   D. 642   E. NOTA

8. Evaluate: $\left(25^{\frac{3}{2}}\right)\left(8^{\frac{2}{3}}\right)\left(1000^{-\frac{1}{3}}\right)$

   A. $\dfrac{1}{5}$ B. 5   C. 50

   D. 100   E. NOTA

9

Find the value of $\sqrt{\dfrac{9}{4}} \div \sqrt{\dfrac{1}{9}}$

A. $\dfrac{2}{9}$ B. $\dfrac{1}{4}$ C. 9

D. 4.5   E. NOTA

10

Simplify: $\left(\dfrac{9\dfrac{1}{9}}{\dfrac{9+\dfrac{1}{9}}{9+\dfrac{1}{99}}} \left[9\left(\sqrt{16}+\sqrt{49}\right) \right] \right)$

A. 81   B. 892   C. $\dfrac{922}{81}$

D. 729   E. NOTA

11 $\left(\dfrac{1}{2}\right)\left(\dfrac{2}{3}\right)\left(\dfrac{3}{4}\right)\cdots\left(\dfrac{98}{99}\right)\left(\dfrac{99}{100}\right) = S$. Find the value of S.

A. 0.01   B. 1   C. 0.5

D. 1.5   E. NOTA

12 $\dfrac{2^2+2^2+3^2+3^2+4^2+4^2+5^2+5^2+6^2+6^2}{7^2+7^2+8^2+8^2+9^2+9^2+10^2+10^2} = x$. Find the reciprocal of the additive inverse of the opposite

of the multiplicative inverse of x.

A. $-\dfrac{49}{15}$ B. $-\dfrac{15}{49}$ C. $\dfrac{49}{15}$

D. $\dfrac{15}{49}$ E. NOTA

13 Find $\dfrac{a}{c}$ if a is $\dfrac{2}{3}$ of b and b is $\dfrac{5}{7}$ of c.

A. $\dfrac{10}{21}$ B. $\dfrac{14}{15}$ C. $\dfrac{7}{10}$

D. $\dfrac{9}{8}$ E. NOTA

14 $\left(Q^2\right)(8!) = (9!)$, then $Q = ?$

A. 9   B. 2   C. 3 or -3

D. 10   E. NOTA

15 Simplify $3\sqrt{63} - 2\sqrt{28} + \sqrt{175}$

A. 0   B. $8\sqrt{7}$ C. $10\sqrt{7}$

D. $2\sqrt{210}$ E. NOTA

16 By definition, $\sqrt{M^2}$ is equal to

A. $|M|$ B. $-M$ C. M

D. $\pm M$ E. NOTA

17 Simplify: $1\left(\dfrac{1}{1}+\dfrac{1}{2}+\dfrac{1}{3}+\dfrac{1}{4}+\dfrac{1}{5}\right)+3\left(\dfrac{1}{2}+\dfrac{1}{3}+\dfrac{1}{4}+\dfrac{1}{5}\right)+5\left(\dfrac{1}{3}+\dfrac{1}{4}+\dfrac{1}{5}\right)+7\left(\dfrac{1}{4}+\dfrac{1}{5}\right)+9\left(\dfrac{1}{5}\right)$

A. 10   B. 9   C. 15

D. $9\dfrac{1}{2}$ E. NOTA

18 $1-2+3-4+5-6+7-8+\cdots 99-100 =$

A. -100   B. -50   C. -49

D. 50   E. NOTA

19 When $y + 9 = 17$, which of the following is true?

A. $y = (2!)^3$ B. $2^{3!}$ C. $y = (2!)^{3!}$

D. $y = 8! - 7!$ E. NOTA

20 Simplify $\dfrac{5}{7 - \dfrac{4}{6 - \dfrac{2}{3}}}$

A. $\dfrac{5}{16}$ B. $\dfrac{4}{5}$ C. $\dfrac{5}{4}$

D. $\dfrac{80}{9}$ E. NOTA

21 Simplify $\left(\dfrac{-6x^5 y^3}{5}\right)^3$

A. $-\dfrac{6x^{15} y^9}{5}$ B. $-\dfrac{6x^8 y^6}{5}$ C. $-\dfrac{6x^{15} y^6}{125}$

D. $-\dfrac{216x^{15} y^9}{125}$ E. NOTA

22

Evaluate: $\dfrac{1}{1\cdot 2\cdot 3}+\dfrac{2}{2\cdot 3\cdot 4}+\dfrac{3}{3\cdot 4\cdot 5}+\cdots+\dfrac{98}{98\cdot 99\cdot 100}$ Express your answer as a fraction in simplest form $\dfrac{b}{a}$.

Find $a+b$

A. 149
B. 24749
C. 14851
D. 194
E. NOTA

23 Find the sum of $3+7+11+\cdots+483$

A. 29160
B. 29403
C. 31127
D. 33589
E. NOTA

24 When the following expression is simplified it can be expressed in the form $x^a y^b$:

$\left(\dfrac{x^2 y^{-5}}{x^3 x^{-2} y^{10}}\right)^{-2}$. Find the average of a and b.

A. 4
B. 14
C. 16
D. 28
E. NOTA

25

Simplify $\dfrac{729^{334}}{81^{500}}$

A. 3
B. 81
C. 14,348,907
D. 3,486,784,401
E. NOTA

26 Simplify:

$\dfrac{\left(x^2\right)^3 \left(y^4\right)^2 \left(x^2 y\right)^3 xy}{\left(xy\right)^5 xy\left(x^2 y^2\right)}$

A. $x^3 y^2$
B. $x^4 y^2$
C. $x^5 y^4$
D. $x^5 y^5$
E. NOTA

27 If the table below defines certain values of a function f, then what is $f\left(f\left(f\left(f\left(5\right)\right)\right)\right)$?

x	1	2	3	4	5
f(x)	4	1	4	0	2

A. 0
B. 1
C. 2
D. 4
E. NOTA

28

If the ratio of $2x-y$ to $x+y$ is $\dfrac{2}{3}$, find the ratio of x to y.

A. $\dfrac{4}{5}$
B. $\dfrac{1}{5}$
C. 1
D. $\dfrac{6}{5}$
E. NOTA

29

What is $\dfrac{(n-2)!(n+1)}{(n-3)!}$, for n an integer greater than 3?

A. $(n-2)!$

B. $n^2 - n - 2$

C. $\dfrac{n-2}{n-3}$

D. $n^2 - 2n + 1$

E. NOTA

30 The numerator of a fraction is a two-digit number. The denominator is the two-digit number that results from reversing the digits in the numerator. The value of the fraction is 4/7. If the sum of the digits of the numerator is 12, what is the product of the digits of the numerator?

A. 32

B. 35

C. 36

D. cannot be determined

E. NOTA

31

Evaluate: $\dfrac{1+1+1+2+2+2+3+3+3+\cdots 99+99+99+100+100+100}{1^2+1^2+1^2+2^2+2^2+2^2+3^2+3^2+3^2+\cdots 99^2+99^2+99^2+100^2+100^2+100^2}$

A. 0.01

B. $\dfrac{3}{201}$

C. $\dfrac{1}{5050}$

D. $\dfrac{1}{3}$

E. NOTA

Answers

1.   D
2.   C
3.   A
4.   B
5.   D
6.   C
7.   A
8.   C
9.   D
10.   B
11.   A
12.   D
13.   A
14.   C
15.   C
16.   A
17.   C
18.   B
19.   A
20.   B
21.   D
22.   A
23.   B
24.   B
25.   B
26.   C
27.   A
28.   E $\dfrac{5}{4}$
29.   B
30.   A $\dfrac{48}{84}$