SIMPLIFYING, FACTORING AND EXPANDING TOPIC TEST

1. Simplify: $\sqrt[3]{\frac{2}{x+y}}$

a) $\frac{\sqrt[3]{2x+2y}}{x+y}$ b) $\frac{\sqrt[3]{2(x+y)^2}}{x^3+y^3}$ c) $\sqrt[3]{2}$ d) $\frac{\sqrt[3]{2(x+y)^2}}{x+y}$ e) none of these

2. Simplify: $\frac{\frac{1}{2}-\frac{1}{8}}{\frac{3}{4}-\frac{1}{3}}$

a) $\frac{1}{8}$ b) $\frac{5}{32}$ c) $\frac{3}{5}$ d) $\frac{9}{10}$ e) none of these

3. Simplify: $\frac{3-4i}{3+4i}$

a) $\frac{-7-24i}{25}$ b) $\frac{7+24i}{7}$ c) $\frac{25-24i}{25}$ d) $\frac{25-24i}{7}$ e) none of these

4. Find the value of a+b if $a(x^2-9)-3(b-5x(x-10))=19x^2-150x-42$.

a) 2 b) 0 c) -2 d) -4 e) none of these

5. Evaluate: $\sqrt{56-\sqrt{56-\sqrt{56\ldots}}}$

a) 1 b) $2\sqrt{2}$ c) 7 d) 8 e) none of these

6. Simplify: $3\sqrt{2}+4\sqrt[6]{8}+5\sqrt[3]{16}$

a) $6\sqrt{2}$ b) $8\sqrt{2}$ c) $12\sqrt{2}$ d) $24\sqrt{2}$ e) none of these

7. Find the numerical coefficient of the 8th term of the expansion $(3x-y)^{10}$

a) -3240 b) -1140 c) -120 d) -27 e) none of these

8. What is the sum of the elements in the 12th row of Pascal's Triangle?

a) 2047 b) 2048 c) 4095 d) 4096 e) none of these

9. Find the 6th term of the expansion $(x-y)^8$

a) $-56x^3y^5$ b) $-28x^2y^6$ c) $28x^2y^6$ d) $56x^3y^5$ e) none of these

10. Find the constant term of the expansion $(2x^2 + \frac{1}{x})^6$

a) 60 b) 15 c) 4 d) 1 e) none of these

11. Which of the following is a perfect number?

a) 16 b) 20 c) 28 d) 32 e) none of these

12. Simplify: $\frac{x^3+y^3}{x^2-xy+y^2} \div \frac{x^2-y^2}{x^2+xy-2y^2}$

a) 1 b) $x+2y$ c) x^2+xy+y^2 d) $\frac{x+y}{x-y}$ e) none of these

13. When x^9-y^9 is factored as completely as possible with integral coefficients and integral exponents, how many factors are there?

a) 3 b) 4 c) 5 d) 6 e) none of these

14. Evaluate: $(888,893)(888,883)-(888,891)(888,885)$

a) -34 b) -16 c) 16 d) 34 e) none of these

15. Which of the given expressions is equal to $\sqrt{8 - 4\sqrt{3}}$

a) $\sqrt{6} - \sqrt{2}$ b) $\sqrt{6} - 1$ c) $4 - 2\sqrt{3}$ d) $2\sqrt{2} - 2\sqrt{3}$ e) none of these

16. Evaluate: $\left(\frac{3\sqrt{3}}{2} - \frac{3}{2}i\right)^{-4}$

a) $\frac{-1}{162} - \frac{\sqrt{3}}{162}i$ c) $\frac{1}{162} + \frac{\sqrt{3}}{162}i$ e) none of these

b) $\frac{1}{162} - \frac{\sqrt{3}}{162}i$ d) $\frac{-1}{162} + \frac{\sqrt{3}}{162}i$

17. What is the 25th number in the 27th row of Pascal's Triangle?

a) 27 b) 325 c) 729 d) 1989 e) none of these

18. Simplify: $\dfrac{(\sec^2 x)(1+\csc x)-(\tan x)(\sec x + \tan x)}{(\csc x)(1 + \sin x)}$

a) $\sin x$ b) $\cos x$ c) $\sin^2 x$ d) $\cos^2 x$ e) none of these

19. Find the sum of the coefficients of the expansion $(3x + 2y - 3z)^8$

a) 2 b) 128 c) 256 d) 1,681,216 e) none of these

20. Evaluate: $3125 - 3125(3) + 10(125)(9) - 10(5)(135) + 25(81) - 3^5$

a) 0 b) 32 c) 125 d) 512 e) none of these

21. Find the numerical coefficient of the term of the expansion $(x+y-2z)^8$ which contains xy^4z^3.

a) -2240 b) -560 c) 280 d) 1680 e) none of these

22. Which of the given polynomials is a factor of $x^4 - 6x^2y^2 + y^4$?

a) $x-y$ b) $x^2-3xy+y^2$ c) x^2-xy-y^2 d) $x^2+2xy-y^2$ e) none of these

23. How many whole numbers are factors of 4800?

a) 42 b) 44 c) 48 d) 56 e) none of these

24. Simplify: $\dfrac{30}{\sqrt[3]{4} - \sqrt[3]{6} + \sqrt[3]{9}}$

a) $-30(\sqrt[3]{2} - \sqrt[3]{3})$ c) $-6(\sqrt[3]{2} + \sqrt[3]{3})$ e) none of these

b) $30(\sqrt[3]{3} - \sqrt[3]{2})$ d) $6(\sqrt[3]{2} + \sqrt[3]{3})$

25. How many zeros does 50! end in?

a) 5 b) 10 c) 12 d) 16 e) none of these

26. Find a number between 200 and 230 which divides evenly into $3^{120}-2^{120}$.

a) 207 b) 211 c) 213 d) 223 e) none of these

27. Find the numerical coefficient of the 4th term of the expansion $(x + 2y)^{\frac{1}{2}}$

a) $\frac{1}{128}$ b) $\frac{1}{16}$ c) $\frac{3}{8}$ d) $\frac{1}{2}$ e) none of these

28. Find the 4th term of the expansion $(x\log_8 2 - y\log_3 9)^5$

a) $-80(2^{2x})(y^3)$ c) $\frac{-8x^2y^3}{9}$ e) none of these

b) $-10(x\log_8 4)(\log_3 729)$ d) $-720x^2y^3$

29. Evaluate: $\frac{(\cos 32^\circ)(\sin 40^\circ)(\sin 51^\circ)(\csc 58^\circ)(\cot 220^\circ)}{(\cos 40^\circ)(\sec 60^\circ)(\cos 321^\circ)}$

a) 2 b) $\frac{\sqrt{3}}{2}$ c) 1 d) $\frac{1}{2}$ e) none of these

30. How many terms are there in the expansion $(a+b+c+d)^{10}$?

a) 11 b) 15 c) 286 d) 10000 e) none of these