

PLUS ONE (MATHEMATICS) REVISION QUESTIONS – MARCH 2015

1. If $n(A \cup B) = 50$, $n(A) = 28$, $n(B) = 32$ Find $n(A \cap B)$.
2. Determine the domain and range of the function $f(x) = \frac{|x-5|}{x-5}$
3. Find the value of $\sin \frac{31\pi}{3}$
4. Prove that $\tan 3x \cdot \tan 2x \cdot \tan x = \tan 3x - \tan 2x - \tan x$
5. Prove That $\frac{\cos 7x + \cos 5x}{\sin 7x - \sin 5x} = \cot x$
6. For every positive integer n Prove That $2^n > n$ using P M I
7. Express the complex number $z = \frac{2-i}{(1-i)(1+2i)}$ in the form $a+ib$
Represent z in modulus amplitude form.
8. Solve graphically the system of linear in equations:
 $x \geq 0$, $y \geq 0$, $2y - x \leq 4$, $3x + 2y \leq 6$
9. Find x If $\frac{1}{8!} + \frac{1}{9!} = \frac{x}{10!}$
10. If $nC_7 = nC_5$ Find nC_3 .
11. If $x+y = \pi/4$ prove that $(1 + \tan x)(1 + \tan y) = 2$. Hence deduce the value of $\tan \pi/8$.
12. How many words can be formed using all the letters of the word EQUATION?
In how many of these the vowels are together?
13. Using Binomial theorem Prove that $6^n - 5n - 1$ is divisible by 25.
14. Find the term independent of x in the expansion of $(\frac{3x^2}{2} - \frac{1}{3x})^6$
15. In an AP if m^{th} term is n and n^{th} term is m , find the first term and common difference.
Also find the $m+n^{\text{th}}$ term.
16. Find the sum of all 3 digit numbers which are multiples of 7.
17. In any $\triangle ABC$ prove that $\tan \frac{(B-C)}{2} = \frac{b-c}{b+c} \cot A/2$
18. Write the converse, inverse and contra positive of the statement:
If a triangle is equilateral then it is isosceles.
19. Using First principle find the derivative of $\tan x$.
20. Find the probability of getting an even number on the first die
or a total of 8, in a single throw of two dice.
21. Write the negation of the statement “The sum of 3 and 4 is 9”
22. Using quotient rule find the derivative of $\frac{\sin x}{1 + \cos x}$
23. Find the equation of the line parallel to $3x - 4y + 2 = 0$ and passing through $(-2, 3)$
24. Find the latus rectum and eccentricity of the ellipse $\frac{x^2}{25} + \frac{y^2}{9} = 1$
25. Consider the numbers 4, 7, 8, 9, 10, 12, 13, 17. Find the mean deviation about the mean.
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■ Anoop Kumar M. K.