# J15 EDUCATIONAL CONSULTS

***MOTTO: BRINGING KNOWLEDGE TO YOUR DOORSTEP***
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## MTH101 EXAM SUMMARY

Evaluate 34i

**5**

Solve for x 32x 327x 2

**x3**

Find the product of 4i and 4 i

**17**

What are the center and radius of x2y2 2x6y3

**1  3 rsqrt13**

Simplify frac32i4 i

**frac1011i17**

Expand 3 6i2

**27 36i**

What is value of i15

**i**

Find the next term of each sequence 4163664 100

**144**

Expand and simplify 2x 1x3

**2x25x 3**

Factorise completely 9x2 24x 16

**3x 42**

Find the next term of each sequence 4 16 36 64 100

**144**

x 32 is equal to

Answer:A: x26x9

Question: Find an equation whose roots are  2 and 1

**x2x20**

When solving a linear system of equations you are looking for which of the following

**Points of Intersection**

A linear system of equations made up of two intersecting lines has  solutions

**one**

If the legs of a right triangle measure 5 and 12 cm respectively the measure of the third side is

**13cm**

Which of the following is an equation of a circle

**x13**

The solutions of a Quadratic Equation isare also sometimes called

**roots**

The function x24x3 completely factorised is

**x1x3**

In the Quadratic formula xfra bpm sqrtb2 4ac2a b2 4ac is called the

**discriminat**

If fx2x34 what is f 2

**5**

What is the slope of the linear equation 2yx 4

**frac12**

Which ordered pairs are all the y intercepts of the equation yx22x1

**0 1**

What is the radius of the circle graphed by the equation x 12y225

**5**

Power set of empty set has exactly  subset

**zero**

What is the minimum value of yx2 4x 6

**6**

Approximate the distance between the point  3 19  7  5 to the nearest tenth

**243**

Question: The number of elements in the Power set PS of the set SPi 1 23

**4**

If A and B are sets and Acup BAcap B

**Aphi**

In an axiomatic development of plane Euclidean geometry points and lines are

**undefined terms**

Let Et  xyz  and Ft  rst  then E and F are

**disjoint**

Which of the following is true of  Asubset B

**all the option are correct**

Two sets A and B are equal iff every xin A belongs to B and every yin B  belongs to A This is called

**Axiom of extension**

The power set of a set M is denoted by

**2M**

One of the following is not a family of sets

**t 2t  01**

List the elements of the set  Bt  xx 25

**t 7**

Which of the following is true of axiomatic development of plane Euclidean geometry

**two different points are on one and only one line**

Write the set  Bt  2468   in set builder form

**Bt  xx is even and positive**

Let Et  xx2 3x 2  Ht  12  Then

**EH**

If a  b and b  c then

**a  c**

Let R be the set of real numbers and let Q be the set of rational numbers Then R  Q consist of the

**irrational numbers**

Which of the following concisely defines the union of A and B

**left  xxin A  or  xin B ight**

Which of the following correctly defines the absolute value x of a number x

**x x if x  0**

The set left  x2leq xleq 5ight  is aan

**closed interval**

The natural numbers are closed under the operation of

**addition**

B is a proper subset of A if

**Bsubset A  and  B eq  A**

If a  b then

**b  a is a positive number**

Let the universal set be the set of positive integers and let A be the set of the positive even numbers Find A compliment

**left  135ight**

In the roster form the set of natural is

**left  123 right**

The set left  x2leq xleq 5right  is aan

**closed interval**

What are the values of x for which \[\frac {x^3 + 3x^2 + 2x} { x^2 + 5x +6} = 0 \]
**x = 0, -1, or -2**

Let x be the required Arithmetic Mean, then 8, x, 16 form three successive terms in the Aritmetic Progression. Find x.
**12**

The sum of the first and third terms of a Geometric progression is \[6\frac{1}{2}\] and the sum of the second and fourth terms is \[9\frac{3}{4}\].Find the first term.
**2**

The coordinate of the centre and the radius of the circle \[y^2 + x^2 ??? 14x -8y + 56 = 0\] is _____
**(7,4)**

The sum of five numbers in an Arithmetic Progression is 25 and the sum of their squares is 165. Find the common difference.
**-2**

Let x be the required Geometric Mean (GM) between a and b. Then a, x, b, are the successive terms in the Geometric Progression. Find the GM
**\[\sqrt{ab}\]**

Let \[Z_1 = 12 + 5i,~~ Z_2 = 14 ??? 7i\] express \[Z_1 Z_2\] in standard form
**203 -14i**

The limiting value of \[\frac{n^{3}+5n^{2}+2}{2n^{3} + 9} \] as \[n\rightarrow \infty\]is _____
**1/2**

Suppose A = (1, 4), B = (4, 5), C = (5, 7), then\[ (A \times B) \cap (A \times C)\] is _____
**{(1, 5), (4,5)}**

Let U = {1, 2, ?????????., 8, 9}, A = {1, 2, 3, 4}, B = {2, 4, 6, 8}, C = {3, 4, 5, 6}, then \[(A?B)^c\]
**{1, 7, 9}**

A company sets up a smoking fund and invests N10, 000 each year for 5years at 9% compound interest, the worth of the fund after 5years is _____
**N 59, 847**

The smallest number of terms of the geometrical series, 8 + 24 + 72 +.., that will give a total greater than 6, 000, 000 is _____
**13**

The common ratio in a geometric series having first term 7, the last term 448, and the sum 889 is _____
**2**

The number of terms in an A.P. whose first term is 5, common difference 3, and sum 55 is _____
**5**

Suppose S = a + (a + d) + (a + 2d) + [a + (n 1) d] the sum of n terms is _____
**\[\frac{n(a+l)}{2}\]**

_____ is the value of n given that 77 is the nth term of the A.P \[3\frac{1}{2}, ~~7,~~ 10\frac{1}{2},..\]
**10**

_____ is the limiting value of\[ 3x^3 + 5x^2 6\] as \[n\rightarrow -2\]
**-10**

The 23rd term of the A.P 7, 3,+1gives_____
**81**

The 383rd term of the series 5 + 8 + 11 + ... is_____
**128**

The sum of five numbers in an A.P is 25 and the sum of their squares is 165. Find the numbers
**\[\pm 2\]**

The sum of the first n terms of a series is 2n^2. Find the nth term and of the series.
**4n-3**

Find the number of terms in an A.P. whose first term is 5, common difference 3, and sum 55.
**5**

let \[ Z_{1} = 5 + 12i, ~~ Z_{2} =3 + 4i\]. Find \[( Z_{1})^{2} - (Z_{2})^{2}\] in standard form
**-92 + 96i**

Determine the value(s) of x for which\[\frac{x^{7}+5x^{5}+6x^{3}}{x^{5}-5x^{4}+6 x^{3}}\] is undefined
**\[ 2~~or~~ 3\]**

Suppose \[Z_{1} = 5 + 12i \] and \[Z_{2} =3 + 4i\], express \[\frac{Z_{1}}{Z_{2}}\] in polar form
**69/25(cos14.3 + isin14.3)**

Find the equation of a circle having centre (5, -4) and radius 7
**\[x^{2}+y^{2}-10x+8y-8=0\]**

Express 12 + 5i in polar form (i.e in form of \[z=r\cos\theta + i\sin\theta\]
**\[13(\cos 22.6 + i\sin 22.6)\]**

If \[ Z_{1 }= 7 + 12i\] and \[Z_{2} = 4 + 3i\]. Find the distance between \[Z_{1 }~~and ~~Z_{2}\]
**\[\pm 3\sqrt (10)\]**

Find the solution set for \[\frac{x-5}{x+10}\leq 1\]
**\[x\leq -10 ~~or~~x\geq 5\]**

Solve for x in \[ |x2  4|\leq 4\]
**\[0\leq x 2\sqrt(2)\]**

Let M = {a, b} then find the power set \[2^{M}\].
**\[\{ M,a, b, \phi\}\]**

If U = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}, A = {1, 4, 7, 10}, B = {2, 5, 8}. Find \[A\cap B\]
**{1, 3, 6, 9}**

8 If A = {1, 2, 3, 4}, B = {3, 4, 5, 6}, C = {4, 5, 6, 7} Find \[ (A \cap B) (B \cup C)\]
**3**

Determine the value(s) of x for which \[\frac{x^{7}+5x^{5}+6x^{3}}{x^{5}-5x^{4}+6 x^{3}}\] is undefined
**\[ 2~~or~~ 3\]**

Find the value(s) of x for which \[\frac{x^{3}-7x^{2}+6x}{x^{5}+4x^{4}-3}=0\]
**\[ 1 ~~or~~ 6\]**

A survey in a class shows that 15 out of the pupils play cricket, 11 play tennis and 6 play cricket and tennis. How many pupils are there in the class. (Hint: Assume that everyone plays at least one of these games)
**20**

In a survey of 100 students, the numbers studying various languages were found to be: Spanish 28: German 30: French 42: Spanish and French 10: Spanish and German 8: German and French 5: all the three languages 3. How many students were studying no language?
**20**

A market survey was conducted to determine consumer acceptance for a group of products. The survey revealed the following about three products A, B, & C. of 155 people interviewed, it was discovered that,74 like product A, 81 like product B,60 like product C,27 like product A & B, 25 like products A & C,35 like products B & C and 12 did not like any of the three products.Determine the number of people out of

those interviewed that liked all three products. Determine the number of people out of those interviewed that liked all three products.
**15**

Determine the limiting value of \[\frac{3n^{2}+1}{4(n^{2}-2)}\] as \[n\rightarrow \infty\]
**\[\frac{3}{4}\]**

Sum to n terms of three APs are \[S_{1}, ~~S_{2} ~~and~~S_{3}\]. The first term of each of them is 1 and common differences are 1, 2, and 3 respectively. Find the nth term to show that the above \[S_{1}, ~~S_{2} and~~S_{3}\] are APs.
**\[\frac{n(n-1)}{2}\]**

If\[ Z_{1} = 2 +3i , and Z_{2} = 3 + 4i\], find \[ \frac {Z_{1}} {Z_{2}}\]
**\[\frac{ 18 + i} {25}\]**

Suppose A = ( 1, 4), B = (4, 5), C = (5, 7), determine ( AxB) n( AxC).
**{(1, 5), (4, 5))**

In question 7 above, find A'n B
**B**

If U = { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10}, A = [1, 4, 7, 10], B =[2, 5, 8], find A'
**[2, 3, 4, 5, 6, 8, 9]**

If A' is a complement of set A, Find the equivalent of (A')'
**A**

Let A = ( 1, 4), B = (4, 5). Find AxB
**{(1,4), (4,4), (1,5), (4,5)}**

Find the equation of the circle centre(-1, 2) and radius 4
**\[y^2 + x^2 + 2x - 4y -11 = 0 \]**

**Find the distance between points A(-3, 4) and B(2, 5)**
**\[\sqrt{26}\]**

**What is the polar form of a complex number Z = 3 + 4i?**
**Z = 5(Cos45 + isin45)**

**In solving the quadratic equation \[x^2 -4x + 3 =0\], the roots are _____**
**real**

Which term of the Arithmetic Progession 49, 44, 39, . . . , is 9?
**Nineth term**

Find the equation of the circle center (2 , -3) and radius 4
**\[y^2 + x^2 -4x + 6y - 3 =0\]**

Express 5 + 12i in a polar form, i.e in form of\[ Z = r( cos {\theta} + isin {\theta})\]

**Z = 13( Cos45 + isin45)**

Let Z = 5 + 12i, find |Z|
**13**

As in no 5 above, find \[Z_{1} Z_{2}\].
**29 + 15i**

This question is for nos 5 and 6. Let \[Z_{1} = 5 + 2i\] and \[Z_{2} = 7 + 3i \], find \[Z_{1} + Z_{2}\].
**12 + 5i**

If \[ Z_{1} = 3 + 2i and Z_{2} = 4 + 3i \], find the distance between \[Z_{1} and Z_{2}\].
**\[\sqrt 2\]**

In the solution of a quadratic equation\[ x^2 - 4x + 5 = 0\], the roots are _____
**imaginary**

Evaluate \[\frac{3n^2- 5n + 4}{4n^2 +7n +1} as n\rightarrow \infty\]
**\[\frac{3n} {7}\]**

Solve for x if \[|x - 5|\leq 4\]
**\[1 \leq x\leq 9\]**

If \[U_{n} = 2n^2 - 4n + 5\], evaluate \[U_{1}\]
**3**

What are the values of x for which \[\frac {x^3 + 3x^2 + 2x} { x^2 + 5x +6} = 0 \]
**x = 0, -1, or -2**

Let x be the required Arithmetic Mean, then 8, x, 16 form three successive terms in the Aritmetic Progression. Find x.
**12**

The sum of the first and third terms of a Geometric progression is \[6\frac{1}{2}\] and the sum of the second and fourth terms is \[9\frac{3}{4}\].Find the first term.
**2**

Solve for x in \[ \frac{ | x + 2|} {4} \leq 3\]
**\[-14 \leq x \leq 10\]**

Find the number of terms in an Arithmetic Progression whose first term is 5 common difference 3 and sum is 55
**5**

Solve the inequality \[( x -3)( x- 2) \leq 0\]
**\[ 2 \leq x \leq 3 \]**

Find the values of x for which \[\frac {x^ 3 + 3x^ 2 +2x +7} {x^2 +5x +6 }\] is undefined
**x = -3 or x = -2**

Find the solution set of \[\frac {x+2} {x + 1} = 1\]
**\[x \leq -2, x \geq-1\]**

The sum of an A.P. is 20, the first term being 8 and the common difference 2. Find the number of terms in the series.
**4 or 5**

Evaluate\[ \frac {3n^2 -14n + 6}{n^2 + 7n + 2}\]
**3**

Find the limiting value of \[\frac { 7n + 5} { 2n - 3}\] as n \rightarrow {\infIty**}**
**\[\frac{7} {2}\]**

How many read Science today if and only if, they read Caravan?
**2**

How many read Caravan as their only magazine?
**30**

In a survey of 100 families, the numbers that read the most recent issues of various magazinees were found to be as follows: Readers digest = 28, Readers digets and Science today = 8, Science today = 30, Readers digest and Caravan = 10, Caravan = 42, Science today and Caravan = 5, All the three magazines = 3. THE ABOVE IS FOR QUESTIONS 6 - 8. How many read none of the three magazines?
**20**

In a recent survey of 400 students in Palm Ville High College, 100 were listed as smokers and 150 as chewers of gum: 75 were listed as both smokers and chewres of gum. Find how many students are neither smokers nor gum chewers

**225**

In a geometric series, the first term is 7, the last term is 448, and the sum is 889. Find the common ratio, r
**r = 2**

Let x be the required Geometric Mean (GM) between a and b. Then a, x, b, are the successive terms in the Geometric Progression. Find the GM
**\[\sqrt{ab}\]**

The sum of five numbers in an Arithmetic Progression is 25 and the sum of their squares is 165. Find the common difference.
**-2**

The sum of the first n terms of a series is \[2n^2 - n\]. Find the nth term
**4n - 3**