

**Question 10**

Which of the following equations is true for all positive values of x and y ?

Option A

☐ $\sqrt{x} \times \sqrt{y} = \sqrt{x+y}$

Option B

☐ $\sqrt{x^4 y^{16}} = x^2 y^4$

Option C

☒ $y\sqrt{x} + y\sqrt{x} = \sqrt{4xy^2}$

Option D

☐ $(x\sqrt{y})(y\sqrt{x}) = x^2 y^2$

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**Question 9**

If α and β are the roots of the equation $3x^2 - 7x - 1$. Find the values of $(\alpha - \beta)^2$.

Option A☒ $\frac{61}{9}$ **Option B**☐ $\frac{55}{9}$ **Option C**☐ $\frac{3007}{81}$ **Option D**☐ $\frac{71}{9}$ [← Previous](#)[SUBMIT & NOW](#)

**Question 8**

Give the first three terms of $(1 + x)^{15}$ in descending order

Option A

☐ $15x^2 + 105x + 15$

Option B

☒ $105x^2 + 15x + 1$

Option C

☐ $455x^2 + 105x + 15$

Option D

☐ $1 + 105x + 15x^2$

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Question 7

In a certain arithmetic progression, the sum of the first and fifth terms is 18 and the fifth term is 6 more than the third term. Find the sum of the first ten terms of the progression.

Option A

☐ 90

Option B

☒ 165

Option C

☐ 330

Option D

☐ 160



The function f and g defined by
 $f(x) = x^3 - 2x^2 - 5x + 6$ and
 $g(x) = x - 1$. Find $f(g(x))$.

Option A

☐ $x^3 - 2x^2 - 5x + 7$

Option B

☐ $x^3 - 5x^2 - 2x + 7$

Option C

☐ $x^3 - 2x^2 - 5x + 5$

Option D

☒ $x^3 - 5x^2 + 2x + 8$

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**Question 4**

Simplify $\left(\frac{x^a}{x^b}\right)^{a+b} \times \left(\frac{x^{a+b}}{x^{a-b}}\right)^{\frac{a^2}{b}}$

Option A

☐ $x^{-a^2-b^2}$

Option B

☐ $x^{(a-b)^2}$

Option C

☒ $x^{3a^2-b^2}$

Option D

☐ $x^{a^2-b^2}$

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**Question 8**

Give the first three terms of $(1 + x)^{15}$ in descending order

Option A

☒ $1 + 105x + 15x^2$

Option B

☐ $455x^2 + 105x + 15$

Option C

☐ $105x^2 + 15x + 1$

Option D

☐ $15x^2 + 105x + 15$

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**Question 3**

Find the inverse of the function defined by $h : x \rightarrow \frac{x}{x^2-1}$.

Option A

☐ $h^{-1}(x) = \frac{1-\sqrt{1+4x^2}}{2x}$

Option B

☐ $\frac{x(x^2-1)}{x}$

Option C

☐ $\frac{x^2-1}{\sqrt{x}}$

Option D

☐ $h^{-1}(x) = \frac{x^2-1}{x}$

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14 Mins : 18 Secs

0 of 10 Questions Attempted

Question 2

Let $A = \{x \in \mathbb{N} : x < 7\}$ and
 $B = \{x \in \mathbb{Z} : |x - 2| < 4\}$. Find
 $A \cup B$?

Option A

☐ $\{-1, 0, 1, 2, 3, 4, 5, 6\}$

Option B

☐ $\{-2, 0, 1, 2, 3, 4, 5, 6\}$

Option C

☐ $\{-2, -1, 0, 1, 2, 3, 4, 5\}$

Option D

☐ $\{1, 2, 3, 4, 5, 6\}$



Assessment 01

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14 Mins : 47 Secs

0 of 10 Questions Attempted

Question 1

Solve completely, the equation

$$\sqrt{(x^2 - 3x + 6)} = 1 - \sqrt{(x^2 - 3x + 3)}$$

Option A

☐ $\frac{1}{2}$

Option B

☐ -2

Option C

☐ -1

Option D

☐ 1



If $\log_2 u = w$, $2 \log_8 u = v$ and $v - w = -4$. Find u ?

Option A

☐ $\frac{1}{512}$

Option B

☐ 1.08

Option C

☒ 512

Option D

☐ 2

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$$A = \begin{pmatrix} 2 & 4 & 3 \\ 1 & -2 & -2 \\ -3 & 3 & 2 \end{pmatrix}.$$

Option A

☐ $-\frac{1}{21} \begin{pmatrix} 2 & 4 & -3 \\ 1 & 13 & -18 \\ -2 & 7 & -8 \end{pmatrix}$

Option B

☒ $-\frac{1}{11} \begin{pmatrix} 2 & 4 & -3 \\ 1 & 13 & -18 \\ -2 & 7 & -8 \end{pmatrix}$

Option C

☐ $\frac{1}{11} \begin{pmatrix} 2 & 1 & -3 \\ 4 & -2 & 3 \\ 3 & -2 & 2 \end{pmatrix}$

Option D

☐ $\frac{1}{11} \begin{pmatrix} 2 & 1 & -2 \\ 4 & 13 & 7 \\ -3 & -18 & -8 \end{pmatrix}$

 $(x-1)$ **Option A**

☒ $\{x : 2 \leq x \leq 3\}$

Option B

☐ $\{x : 1 \leq x \leq 2\}$

Option C

☐ $\{x : -2 \leq x \leq 3\}$

Option D

☐ $\{x : 1 \leq x \leq 3\}$

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4 Mins : 17 Secs

10 of 10 Questions Attempted

Question 4

If α and β are the roots of the equation $3x^2 - 7x - 1$. Find the values of $(\alpha - \beta)^2$.

Option A☐ $\frac{71}{9}$ **Option B**☐ $\frac{55}{9}$ **Option C**☒ $\frac{61}{9}$ **Option D**☐ $\frac{3007}{81}$ [< Previous](#)[SUBMIT C.A. NOW](#)[Next >](#)



function $f(x) = 3x^2 + 10x + 5$

Option A

☒ $-\frac{16}{3} \leq x \leq +\infty$

Option B

☐ $0 \leq x \leq 1$

Option C

☐ $0 \leq x \leq 6$

Option D

☐ $0 \leq x \leq 3$

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**Option A**

☐ $\frac{2}{x^2} - \frac{3}{x} - \frac{2}{x-3}$

Option B

☒ $\frac{2}{x^2} + \frac{3}{x} - \frac{2}{x-3}$

Option C

☐ $\frac{2}{x^2} - \frac{2}{x-3}$

Option D

☐ $\frac{2}{x^2} + \frac{3}{x} + \frac{2}{x-3}$

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Given a function $h : x \rightarrow \frac{x}{x^2-1}$,
 $x < 0, x \neq -1$. Find its inverse.

Option A

☐ $\frac{x(x^2+1)}{x^4-1}, x \neq 1$

Option B

☐ $\frac{\sqrt{1-x^2}}{x}, x \neq 0$

Option C

☒ $\frac{1-\sqrt{1+4x^2}}{2x}, x \neq 0$

Option D

☐ $x - \frac{1}{x}, x \neq 0$

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4 Mins : 24 Secs

10 of 10 Questions Attempted

Question 3

If α and β are the roots of the equation $2x^2 - x - 4 = 0$. Find the value of $\alpha^3 + \beta^3$.

Option A

☐ $\frac{-25}{8}$

Option B

☒ $\frac{-23}{8}$

Option C

☐ 2

Option D

☐ $\frac{25}{8}$

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$m - 6$, m and $m + 18$ are successive terms of a geometric series. Which of the following is/are about m ?

Option A

☐ (ii) only

Option B

☒ (i) and (iii) only

Option C

☐ (ii) and (iii) only

Option D

☐ (i) only

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4 Mins : 55 Secs 9 of 10 Questions Attempted

Question 7

Find the greatest value of

$$-2x^2 + 4x + 3 = 0$$

Option A☒ $\frac{5}{2}$ **Option B**☐ 1**Option C**☐ -2**Option D**☐ 3[← Previous](#)[SUBMIT C.A. NOW](#)[Next →](#)



If $\log_2 u = w$, $2 \log_8 u = v$ and $v - w = -4$. Find u ?

Option A

☐ 2

Option B

☐ $\frac{1}{512}$

Option C

☒ 512

Option D

☐ 1.08

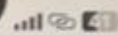
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Question 10

The first term of an arithmetic series is $3p + 5$ where p is a positive integer. The last term is $(17p + 17)$ and the common difference is 2. Find in terms of p the sum of the series.

Option A

☒ $(7p + 7)(10p + 11)$

Option B

☐ $(7p + 5)(10p + 9)$

Option C

☐ $(7p - 7)(10p - 3)$

Option D

☐ $(7p - 5)(10p - 1)$

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Question 9

{Write down the first five terms of the sequence specified by this recurrence relation: $U_1 = 0, U_n = \frac{1}{5 - U_{n-1}} (n \geq 2)$ }

Option A

☐ $0, 5, \frac{24}{25}, \frac{50}{48}, \frac{96}{100}$

Option B

☐ $0, \frac{1}{5}, \frac{25}{24}, \frac{115}{125}, \frac{625}{551}$

Option C

☒ $0, \frac{1}{5}, \frac{5}{24}, \frac{24}{115}, \frac{115}{551}$

Option D

☐ $0, 5, \frac{24}{5}, \frac{120}{24}, \frac{24}{115}$

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Abdulazeez Aderoju ADEGBOLA

Question 5

$m - 6$, m and $m + 18$ are successive terms of a geometric series. Which of the following is/are about m ?

Option A

☐ (ii) only

Option B

☒ (i) and (iii) only

Option C

☐ (ii) and (iii) only

Option D

☐ (i) only

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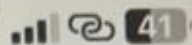
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Question 6

Find the value of k if the function $k(x^2 + 2x - 8)$ has a minimum value of -27 .

Option A

☐ -9

Option B

☐ -3

Option C

☐ -1

Option D

☒ 3

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Question 7

Find in surd form, the square root of
 $4 + 2\sqrt{3}$

Option A

☐ $\pm(3 + \sqrt{5})$

Option B

☐ $\pm(3 + \sqrt{3})$

Option C

☐ $\pm(3 + \sqrt{2})$

Option D

☒ $\pm(1 + \sqrt{3})$

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Question 8

Let $|K| = \begin{vmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{vmatrix}$, then K is a

Option A

☐ Singular Matrix

Option B

☐ Matrix of Order 3

Option C

☒ Square Matrix

Option D

☐ Non-singular Matrix

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Question 1

Find the values of x such that

$$|2x - 3| > |x + 3|$$

Option A

☐ $x < 0$

Option B

☐ $x < 6$

Option C

☐ $0 \leq x \leq 6$

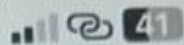
Option D

☒ $x > 6$

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Question 2

In a G.P, $U_3 = 32$ and $U_6 = 4$, Find the sum of the first eight terms of the G.P

Option A

☐ 195

Option B

☐ 205

Option C

☒ 255

Option D

☐ 325

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Question 3

$\frac{1+2x+3x^2}{(1-x)(1+x^2)}$ in partial fractions

Option A

☐ $\frac{3}{1-x} - \frac{2x-2}{1+x^2}$

Option B

☐ $\frac{2}{1-x} + \frac{3x-2}{1+x^2}$

Option C

☐ $\frac{1}{1-x} + \frac{x-2}{1+x^2}$

Option D

☒ $\frac{3}{1-x} - \frac{2}{1+x^2}$

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Question 4

If $\log_2 u = w$, $2 \log_8 u = v$ and $v - w = -4$. Find u ?

Option A

☐ $\frac{1}{512}$

Option B

☒ 512

Option C

☐ 1.08

Option D

☐ 2

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Question 8

The function f is given by the equation $f(x) = x^2 + 6x + 7$ for all numbers x . Which of the following statement is true?

Option A

☐ All of the above

Option B

☐ The function f does not have any real roots

Option C

☐ The graph of $y = f(x)$ in the $x - y$ plane crosses the x -axis at two points $(-7, 0)$ and $(-6, 0)$

Option D

☒ The graph of $y = f(x)$ in the $x - y$ plane has a minimum point at $(-3, -2)$

10 of 10 Questions Attempted

Question 3

Sum the first $2n$ terms of the series
 $5 + 11 + 17 + 23 + \dots$

Option A

☐ $6n + 4n^2$

Option B

☐ $6n^2 + 4n$

Option C

☒ $12n^2 + 4n$

Option D

☐ $12n - 4n^2$

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8 Mins : 46 Secs

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Question 1Functions h_1, h_2 are defined by $h_1 : x \rightarrow \log_2 x, h_2 : x \rightarrow \frac{1}{x}$. Find $h_1(h_2(x)) + h_1(x)$.**Option A**☐ 10**Option B**☐ Cannot be determined**Option C**☐ 1**Option D**☒ 0☐ SUBMIT C.A. NOW

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**Question 1**

Give the first three terms of $(2 + x)^5$ in ascending powers of x

Option A

☐ $4 + 10x + 10x^2 + 5x^2$

Option B

☐ $5x^3 + 10x^2 + 10x + 4$

Option C

☐ $40x^3 + 80x^2 + 80x + 32$

Option D

☒ $32 + 80x + 8x^2 + 40x^3$

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**Question 2**

Find the remainder when

$x^3 - 5x^2 + 6x - 2$ is divided by $(x - 2)^2$.

Option A

☐ $6x + 6$

Option B

☐ $6x + 2$

Option C

☐ $2x + 6$

Option D

☒ $-2x + 2$

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**Question 3**

{Write down the first five terms of the sequence specified by this recurrence relation:

$$U_1 = 0, U_n = \frac{1}{5 - U_{n-1}} (n \geq 2)$$

Option A

☐ $0, 5, \frac{24}{5}, \frac{120}{24}, \frac{24}{115}$

Option B

☐ $0, 5, \frac{24}{25}, \frac{50}{48}, \frac{96}{100}$

Option C

☐ $0, \frac{1}{5}, \frac{25}{24}, \frac{115}{125}, \frac{625}{551}$

Option D

☒ $0, \frac{1}{5}, \frac{5}{24}, \frac{24}{115}, \frac{115}{551}$



**Question 4**

Find the sum to infinity of the geometric series $16 + 12 + 9 + \dots$

Option A

☐ 72

Option B

☐ 53

Option C

☒ 64

Option D

☐ 37

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**Question 5**

If $n(n^2 + 5)$ is a multiple of 6, by inductive hypothesis which of the following is also a multiple of 6?

Option A

☒ $n(n^2 + 5) + 3n(n + 1) + 6$

Option B

☐ $(n^3 + 5) + 3n^2 + 6$

Option C

☐ $(n + 1)(n^2 + 5) + 3(n + 1)^2 + 6$

Option D

☐ $(n + 1)(n^2 + 2n + 6)$



**Question 6**

The operation '*' is defined over the set of real number \mathbb{R} by

$a * b = a + b - ab$. Obtain the identity element e of $*$ over \mathbb{R} .

Option A

☐ 1

Option B

☐ -a

Option C

☐ a

Option D

☒ 0





Assessment 01

Home / MAT 101 Continuous Assessment 01

6 Mins : 40 Secs

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Question 7

The polynomial $f(x)$ is given by

$f(x) = x^4 + x^3 - 7x^2 + 3x + 2$. If also,

$f(x) = (x - 1)(x - 2)(x + 3)(x + c) + ax + b$,

find the values of a , b and c .

Option A

☐ 3, 2, 4

Option B

☐ 1, 2, -3

Option C

☐ 0, -4, 4

Option D

☒ 4, -4, 1



**Question 8**

$\frac{1+2x+3x^2}{(1-x)(1+x^2)}$ in partial fractions

Option A

☒ $\frac{3}{1-x} - \frac{2}{1+x^2}$

Option B

☐ $\frac{3}{1-x} - \frac{2x-2}{1+x^2}$

Option C

☐ $\frac{2}{1-x} + \frac{3x-2}{1+x^2}$

Option D

☐ $\frac{1}{1-x} + \frac{x-2}{1+x^2}$

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**Question 9**

Find the greatest value of

$$-2x^2 + 4x + 3 = 0$$

Option A

☐ $\frac{5}{2}$

Option B

☒ 1

Option C

☐ -2

Option D

☐ 3

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**Question 10**

For what values of x is $\frac{2x - 1}{x + 3} < \frac{2}{3}$

Option A

☐ $x > \frac{3}{4}$

Option B

☐ $x < \frac{3}{4}$

Option C

☒ $x < \frac{9}{4}$

Option D

☐ $\frac{9}{4}$

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