2019/20 Academic Year 3rd Quarter Mathematics Work Sheet For Grade 11 Section___.

I. *Write "True" if the statement is correct and "False" if it is incorrect.*

1. A system of linear equation that has exactly one solution is said to be consistent.
2. The sum of two scalar matrix whose order are 2 by 2 is equal to $\begin{pmatrix}2 & 0\\ 0 & 2\end{pmatrix}$.
3. The additive inverse of matrix A is 0.
4. Two matrix A and B are said to be comfortable for the product if the number of raws A is equal to the number of columns in B.
5. Multiplication of diagonal matrix is commutative.
6. $i^{401} = i$.
7. If Z = $2i - 3$ then $\overline{Z} = 2i + 3$.

II. *Choose the best answer among the following alternative.*

1. Which one of the following has trival solution?

A. $\begin{cases}2x + 3y = 4\\ 3x + 4y = 6\end{cases}$ B. $\begin{cases}3x - 2y = 0\\ 2x - 4y = 0\end{cases}$

C. $\begin{cases}2x + 3y = 4\\ 2x + \frac{4}{3}y = 6\end{cases}$ D. $\begin{cases}3x + 2y = 0\\ 3x + 2y = 0\end{cases}$

2. What is the value of C and D respectively if the system has infinite many solution? Given $\begin{cases}7x + Cy = 6\\ 4x + 3y = D\end{cases}$ A. $\frac{21}{4}$ and $\frac{24}{7}$ B. $31/2$ and $\frac{17}{4}$ C. $\frac{7}{4}$ and 2 D. 4/25 and 7/24
3. In the system of linear equation $\begin{cases}2x + 3y = D\\ 3x + y = E,\end{cases}$ If the solution set are 19/7 and 6/7 then what is the value of D and E respectively?

A. 5 and 9 B. 8 and 9 C. 7 and 10 D. 6 and 0

4. $i^{101,\,243,\,437}$ = _____

A. 1 B. -1 C. i D. $-i$

5. What is the adjoint of A = $\begin{pmatrix}1 & 2 & 3\\ 4 & 5 & 6\\ 2 & 1 & 3\end{pmatrix}$

A. $\begin{pmatrix}9 & 0 & -6\\ -3 & -3 & 3\\ -3 & 6 & -3\end{pmatrix}$ B. $\begin{pmatrix}3 & 2 & 4\\ 4 & -2 & -1\\ 4 & 3 & 2\end{pmatrix}$ C. $\begin{pmatrix}9 & -3 & -3\\ 0 & -3 & 6\\ -6 & 3 & -3\end{pmatrix}$ D. $\begin{pmatrix}3 & 4 & 4\\ 2 & -2 & 3\\ 4 & -1 & 2\end{pmatrix}$

6. Which one of the following is not true?

A. $\begin{vmatrix} 3 & 4 & 0 \\ 2 & 5 & 0 \\ 1 & 6 & 0 \end{vmatrix} = 0$

B. $\begin{vmatrix} 2 & 3 & 4 \\ 5 & 6 & 2 \\ 2 & 3 & 4 \end{vmatrix} = 0$

C. $\begin{vmatrix} 3 & 2 & 1 \\ 2 & 1 & 3 \\ 4 & 5 & 2 \end{vmatrix} = \begin{vmatrix} 3 & 2 & 4 \\ 2 & 1 & 5 \\ 1 & 3 & 2 \end{vmatrix}$

D. $\begin{vmatrix} 1 & 2 & -1 \\ 2 & -2 & 1 \\ 6 & 4 & 3 \end{vmatrix} = \begin{vmatrix} 1/3 & 1/3 & 0 \\ 0 & -3/10 & 1/10 \\ -2/3 & -4/15 & 1/5 \end{vmatrix}$

7. Let A be a 3 x 3 matrix and |A| = -2, then what is the value of |adj (A)|?

A. -8 B. -2 C. 4 D. -1/2

8. The simplified form of $\left(\frac{1-i}{\sqrt{2}}\right)^{60}$ is:

A. 1 B. -1 C. i D. –i

9. Let Z = $\left(\frac{1-i}{1+i}\right)^{18}$, then what is the value of Z?

A. i B. 1 – i C –i D. -1

10. If $Z_1 = -3 + 4i$ and $Z_2 = 1 + 2i$, then what is the value of $\frac{2Z_1}{Z_2} + \overline{Z_2}$?

A. 3 + 2i B. 2 + 3i C. 3 + 5i D. 3 – 2i

11. If A is a square matrix of order 3 and det (A) =5, then what is the value of det (A. adj(A)?

A. 3 B. 125 C. 25 D. 5

12. The modules of $\frac{1}{i+1}$ is:

A. $\frac{1}{2}$ B. $\frac{1}{\sqrt{2}}$ C. 1 D. $\sqrt{2}$

13. Find the argument of the complex number Z = $\frac{1}{2} + \frac{\sqrt{3}}{2}i$.

A. $\frac{\pi}{6}$ B. $\frac{\pi}{3}$ C. $\frac{\pi}{4}$ D. $\frac{2\pi}{3}$

14. Which one of the following is not true for two complex number Z_1 and Z_2?

A. $|Z_1| = |\overline{Z_1}|$

B. $|Z_1 . Z_2| = |Z_1||Z_2|$

C. $|Z_1 + Z_2| \leq |Z_1| + |Z_2|$

D. $|Z_1 - Z_2| \leq |Z_1| - |Z_2|$

15. Which of the following is not true?

A. $\sqrt{(-4)(9)} = \sqrt{-4}\sqrt{9}$

B. $\sqrt{(-3)(-2)} = \sqrt{-3}\sqrt{-2}$

C. $\sqrt{Z^2} = |Z|$

D. $\sqrt{27}\sqrt{-2} = \sqrt{2}\sqrt{-27}$

16. If determinant of $\begin{pmatrix} x & 2 & 0 \\ 3 & x & 4 \\ 0 & 2 & x \end{pmatrix}$ is 0, then what is the value of x?

A. 0, $\sqrt{14}$, $-\sqrt{14}$ B. 1, $\sqrt{2}$, $\sqrt{6}$ C. 3, $\sqrt{12}$, $-\sqrt{12}$ D. $\sqrt{13}$, 2, -2

17. What are the solution set of $x^4 + 1 = 0$

A. 1, -1 and i B. 1, -1, i and i C. $\sqrt{i}$ and $-\sqrt{i}$ D. i and –i

18. Let Z = -1, then the principal argument of Z^6 = _____

A. 6π B. -6π C. $\frac{2\pi}{3}$ D. $\frac{4\pi}{3}$

19. What is the inverse of A = $\begin{pmatrix} a & b \\ c & d \end{pmatrix}$?

A. $\frac{1}{ad-bc}\begin{pmatrix} a & -b \\ -c & d \end{pmatrix}$ B. $\frac{1}{ad-bc}\begin{pmatrix} d & -c \\ -b & a \end{pmatrix}$ C. $\frac{1}{ad-bc}\begin{pmatrix} d & -b \\ -c & a \end{pmatrix}$ D. $\frac{1}{ad-bc}\begin{pmatrix} a & b \\ c & d \end{pmatrix}$

20. What is the product of A = $\begin{pmatrix} 1 & 2 & 3 \\ 4 & 3 & 2 \\ 1 & 5 & 1 \end{pmatrix}$ B = $\begin{bmatrix} -3 \\ 2 \\ 1 \end{bmatrix}$?

A. $\begin{bmatrix} 4 \\ -2 \\ 6 \end{bmatrix}$ B. $\begin{pmatrix} 3 & 2 & 1 \\ 2 & 3 & 1 \\ 4 & 1 & 2 \end{pmatrix}$ C. $\begin{pmatrix} 4 & -2 & 6 \\ 3 & 2 & 1 \\ 4 & 3 & 1 \end{pmatrix}$ D. $\begin{bmatrix} 2 \\ -1 \\ 3 \end{bmatrix}$

III. Fill in the blank space.

1. If A is 2 x 2 matrix then A. A^{-1} = _____

2. In $\begin{cases} 3x + 2y = 3 \\ x + y = 5 \end{cases}$, x = _____ and y _____

3. Z = 3 – 2i, then $\equiv{Z}$ = _____

4. In A = $\begin{pmatrix} 3 & 2 & 4 \\ 2 & 1 & 4 \\ 5 & 3 & 2 \end{pmatrix}$, M_{11} = _____

5. The Cartesian form of complex number $\sqrt{2}$ (cos $\frac{3\pi}{4} - isin\ \frac{3\pi}{4}$) is _____

III. Work Out

1. Solve the following
   a. $\begin{cases} 3x + 2y + 3Z = 4 \\ x + y + Z = 6 \\ 3x - y - 4Z = 7 \end{cases}$ by cramers rule.
   b. $\begin{cases} 2x + 3y = 1 \\ 3x + 2y = 3 \end{cases}$ by Guassian Elimination Method.
2. Simplify
   a. $\frac{(1 + 3i)(i + 4)}{1 + i}$
3. Solve $x^4 - 8 = 0$
4. The polar form of Z = 1 – i is _____
5. Express Z = $-\sqrt{3}$ + , in to polar form and evaluate Z^8,