

Name and Time: _____

G-Number: _____

1. a) Write down the augmented matrix for the system of equations

$$\begin{aligned}2x + y - 3z &= 0 \\ -2x + 2y + z &= -7 \\ 3x - 4y - 3z &= 7\end{aligned}$$

- b) Solve the above system by using matrix method _____

2. Solve the system of equations

$$\begin{aligned}x + 2y &= 4 \\ 2x + 4y &= 8\end{aligned}$$

3. Write the system of equations corresponding to the given matrix.

$$\left[\begin{array}{ccc|c} 2 & -1 & 1 & 1 \\ 3 & 1 & -1 & 2 \\ 4 & 2 & 0 & 3 \end{array} \right] \quad (1)$$

4. a) Solve the system of equation

$$x + y = 8$$

$$x - y = 4$$

- b) Solve the system of equation by matrix method

$$x + y = 12$$

$$x - y = 4$$

5. Is $f(x) = \frac{2}{5+x}$ is one to one? Give reason.

6. Find the inverse of the following one-one function, $f(x) = \frac{4}{2-x}$

7. Find the inverse of the following one-one function, $f(x) = 2x + 3$

8. If $f(x) = \frac{2}{3+x}$ and $g(x) = 3x$ then find

a) $f \circ g(x)$.

b) $g \circ f(x)$

c) $f \circ f(x)$

d) $f \circ g(0)$

e) $f \circ g(2)$

9. a) Solve for the x, $3^x = 81$

b) Solve for the x, $e^x = e^{3x+8}$

c) Solve for the x, $4^{2x+3} = \frac{1}{4}$

d) Sketch the graph of exponential function $f(x) = 2^x$

10. a) Find the exact value of
i) $\log_8(8)$

ii) $\log_{\frac{1}{3}}(27)$

iii) $\log_3(\frac{1}{9})$

b) Solve for the x, $\log_3(x) = 2$

c) Solve for the x, $\log_3(3x - 2) = 2$

d) Solve for the x, $\log_6(36) = 5x + 3$

11. Use the properties of logarithm to express as sum and difference

a) $\log_5(25x^2)$

b) $\log_2(4x^3)$

c) $\ln(4xe^x)$

12. Solve each logarithm equations

a) $\log(x) + \log(x + 15) = 2$

b) $3\log_2(x - 1) + \log_2(4) = 5$

b) $\ln(x + 1) - \ln(x) = 2$

13. a) Find the domain of $f(x) = \frac{4x}{x-3}$. Also, write down the vertical and horizontal asymptotes

b) Use Remainder theorem to find the remainder of $f(x) = 4x^3 - 3x^2 - 8x + 4$ is divided by $x - 2$ then also use factor theorem to determine whether $x - 2$ is a factor of $f(x)$ _____

c) Use Descartes rule of sign to determine how many positive and negative solution $f(x) = 4x^3 - 3x^2 - 8x + 4$ has? _____

14. Sketch the graph of $g(x) = x^2$

1) Write down the function and draw the graph for each problems from a) to d)

a) 3 unit shifting up

b) 2 unit shifting left

c) 1 unit shifting right

d) 4 unit shifting down

- 2) Draw the graph for reflection of $f(x) = x^4$ reflecting on
- a) reflecting on X-axis.
 - b) reflecting on Y-axis.

15. Plot the points $A(-2, 5)$, $B(1, 3)$, $C(-1, 0)$ and form the triangle. Also show that the triangle ABC is a right angle triangle. Also, find the mid-point of side AB.

16. list all the intercepts (X-intercept, Y-intercept) and test for the symmetry for
- a) $y = x^2 + 2$

b) $y^2 = x + 9$

17. Solve each equations

a) $2x + 4 = \frac{1}{3}$

b) $\frac{2}{y+3} + \frac{3}{y-4} = \frac{5}{y+6}$

c) $2x^2 - 5x + 3 = 0$

d) $\sqrt{3t+4} = 2$