

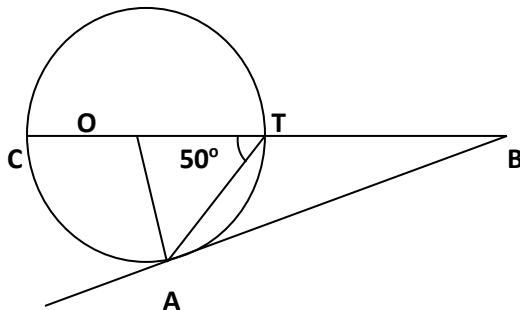
OUR LADY OF GOOD COUNSEL S.S.S GAYAZA

HOLIDAY WORK TERM ONE, 2020

S.4 MATHEMATICS

SECTION A

1. Given that $x * y = x^2 + y$ determine;
 - (i) The value of $-3 * 5$
 - (ii) The value of y when $2 * y = 7$ (4 marks)
2. Solve the equation: $\frac{y+2}{3} - \frac{y-1}{4} = \frac{y+3}{2}$ (4 marks)
3. Given $P^{-1} = \begin{pmatrix} 5 & -2 \\ -7 & 3 \end{pmatrix}$ determine the matrix P . (4 marks)
4. Given that $\tan\theta = \frac{-3}{4}$ and that $0^\circ < \theta < 180^\circ$, without using a calculator, evaluate $\sin\theta - \cos\theta$ (5 marks)
5. Solve the equation $x^2 - 2x = 15$. (3 marks)
6. Given the numbers 0,6,7,3,6 and 5 determine their;
 - (i) Mean
 - (ii) Median (5 marks)
7. Below is a circle with centre O . $\overline{AB}$ is a tangent at A and angle $\angle OTA = 50^\circ$



Determine value of angles;

- (i) $\angle TAB$
 - (ii) $\angle ABT$
8. Point $A(2, 2)$ is rotated through 90° using centre $(1, 0)$. Determine the coordinates of A' , the image of A after the rotation (4 marks)

9. A box has balls of the same size in colours of yellow, green and blue. The probability of picking a yellow ball is $\frac{1}{4}$ and that of a green one is $\frac{2}{3}$. What is the probability of picking a blue one. (4 marks)
10. Solve $\log(6x-2) - 1 = \log(x-3)$

SECTION B

11. (a). Given that $y = ax + \frac{b}{x}$ and that when $x = 1$, $y = 17$ and when $x = 3$, $y = 19$.

Find:

- (i). the values of the constants a and b .
 - (ii). y when $x = 5$
 - (iii). the value of x , other than 3 for which $y = 19$.
- (b). Given that $\frac{15}{5\sqrt{2}-3\sqrt{3}} = a\sqrt{2} + b\sqrt{5}$, Find the values of a and b .
12. (a). The function f is defined by $f(x) = \frac{27}{x+a^2}$
- Given that $f(2) = 1$
- Find
- (i). the value of a
 - (ii). the value of $f(-4)$.
- (b). If $g(x) = 7x + 15$ and $h(x) = 2x^2$. Find x such that $g(x) = h(x)$
- (c). It is given that $f(x) = \frac{x+10}{x-2}$ Find the value of x for which the function is undefined.

- 13 (a). On imported goods, customs duty and value added tax were levied as shown in the table below.

Custom duty	20% of the value of the goods
Value added tax	10% of (value of the goods + customs duty)

Find the total amount which was paid as tax for importing a TV set valued at Sh. 700,000.

- (b). Study the following advert for Nokia phone company

<u>NOKIA SALES TERMS</u> Either CASH PURCHASE: sh.400, 000 and 10% discount. OR HIRE PURCHASE : sh 50,000 and 8 monthly installment of 45,000/=

- (i). Find how much money one would pay for the phone by

(a). Cash purchase

(b). Hire purchase

- (ii). After hire purchase, the phone was sold at 380,000/=.

What was the percentage loss?

END