**ES KANOMBE/EFOTEC**

**KIGALI CITY**

**WORK OF MATHEMATICS FOR SENIOR THREE ALL**

1. Find the equation of straight line which passes through points (7, 10) and (9, 14).
2. Given that $f\left(x\right)=x^{2}+2 and g\left(x\right)=x-3$ find the value of $x for which \left(fog\right)\left(x\right)=(gof)(x)$
3. half distance betueen two numbers is 3, the sum of the greater number and twice the smaller number is 13 . Find the two numbers
4. Given that vectors $u=\left(\begin{matrix}2\\x\end{matrix}\right) and v=\left(\begin{matrix}x+y\\3\end{matrix}\right) are equal ,find the values of x and y hence calculate \left‖\begin{matrix}→&+→\end{matrix}\right‖$
5. $calculate the numerical value of the expression:E=x^{4}-\left(1+\sqrt{2}\right)x^{3}+\left(1+\sqrt{2}\right)x^{2}-\left(1+\sqrt{2}\right)x+\sqrt{2} for x=\sqrt{2}$
6. solve the following simultaneous inequalities $\left\{\begin{array}{c}\frac{1}{3}\left(2x-4\right)\leq 2x-1\\\frac{1}{2}x-\frac{1}{6}x\leq \frac{2}{3}\end{array}\right.$ and show the solution set on the number line.
7. find the equation of a line with $x $intercept -4 and $y$ intercept is 3.
8. find the equation of a line which passes through the point (3,5) and is parallel to $2y=2-6x .$
9. a line passing through the points (-2,4) and (3,5) is parallel to the line passing through the points (a,6) and (-4,1) ,Find a.
10. Find the equation of the line passing through (5,2) which is :

a)parallel

b) perpendicular to the line $5y-2x=10$

11.the table below shows a frequency distribution table of the masses of 40 students in a class.

|  |  |
| --- | --- |
| Mass (kg) | Frequency |
| 41-45 | 3 |
| 46-50 | 7 |
| 51-55 | 12 |
| 56-60 | 10 |
| 61-65 | 6 |
| 66-70 | 2 |

a) State the model class.

b) Use a working mean of 48 to calculate the mean mass of the students

c) Draw a histogram of the data , and then estimate the mode

d) Draw a cumulative frequency curve (ogive) of the distribution.

e) Estimate the median.

12. The expression $2x^{3}+ax^{2}+bx+6$ is exactly divisible by $x-2$ and on division by $x+1$ gives a remainder of -12. calculate the values of a and b and factorize the expression completely.

13. Find the base n if$ 201\_{n}-34\_{n}=134\_{n}$ where n$ \in $/N.