Instructions

- Attempt all questions

1. Express $\frac{3}{1-\sqrt{2}}$ in the form $a + b\sqrt{2}$, hence state the constants a and b

2. Given that $a * b = a + b + ab$

   a) Evaluate $3 * 5$

   b) Find the value of n, when $7 * n = 23$

3. Solve the equation $\frac{5x+2}{3} - \frac{7x+2}{5} = 2$.

4. Solve the simultaneous equations

   $$2x - 3y - 7 = 0$$

   $$x + 4y + 2 = 0$$

5. An interior angle of a regular polygon is 162^0. Find the sum of its interior angles.

6. Solve the inequality $\frac{1}{2} - \frac{2x}{3} < \frac{1x}{6} - \frac{1}{4}$

7. A straight line passes through points (-2,5) and (2,-3), determine the equation of the line.

8. Given that $x^2 - y^2 = 135 \: and \: x - y = 9$. Find x and y

9. Express $4.4\overline{45}$ as a rational number

10. Solve $x^2 + x - 72 = 0$

11. a) Given the set {2,4,6},draw a papygram to show the relation "is the smallest prime factor

    of" .

    b) A mapping is defined by $f(x) = x^2 - x + 3$, determine the range of the mapping whose

    domain is {-3, 0, 3, 2)

    c) Given that $h(x) = 3x - 5 \: and \: g(x) = x^2, fing \: hg(-2)$

12. Solve for x given

    $$5(x + 11) + 2(2x - 5) = 0$$

13. If a=2, b=4, c=4, find the value of;

    i) $ab(b + c)$ (2 marks)

    ii) $\frac{3a+2(b-c)}{3c+a}$ (2 marks)

END