Worksheet Three : Strand one and Strand two

1.   The value of 4 + 1 **modulo 3** is equal to

A. 2   B.   0   C.   3   D.   5

2.   If $\log k = -6$, then $\frac{\log k^2}{2}$ =

A.   -6   B.   -12   C.   36   D. 3

3.   A dining room set is being sold for $1560 if bought cash. The set can be bought on hire purchase by paying a deposit of of $650 followed by 12 monthly payments of $125 each.

The **total** amount paid on hire purchase is:

A. $1560

B. $1500

C. $775.

D. $2150

4.   Solve the expression $9^{7x} = 3^{x-6}$

5.   Simplify $\frac{7}{1+\sqrt{3}}$ by **rationalizing** the denominator.

6.   Show that the operation table for the set {0, 1, 2} and the operation * represent a **group**.

*	0	1	2
0	0	1	2
1	1	2	0
2	2	0	1

7.   Simplify: $\frac{36^{x-1}}{6^x}$

8.   The solution set of $(m+3)(m-4) = 0$ is

A. {3, 4}

B. {3,-4}

C. {-3, 4}

D. {-3, -4}

9.

A sequence is defined as $t_{n+1} = (t_n)^2 - t_n$ and $t_1 = 2$.

The fourth term of the sequence is

A. 2

B. 3

C. 4

D. 5

10. Calculate the value of

$$\sum_{P=1}^{5} (3p - 1)$$

11. solve the equation

$$2x^2 - 5x - 6 = -2$$

using the quadratic formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

12. A function is given as $f(x) = x^3 + 2x^2 - 9x - 18$.
i. Show that $(x - 3)$ is a factor of $f(x)$.
ii. Hence, find the other two factors of $f(x)$.

13. Find the value of k for which the equation $x^2 + kx + 4 = 0$ has **one real** roots.

14. The first three terms of an arithmetic sequence is <log 3, log 6, log 9, log 18,...>
a. Find the: 5th term   Use: t_n= a+(n-1)d
b. sum of the first 20 terms   Use: S_n= $\frac{n}{2}$ [2a+(n-1)d]

15. Consider the quadratic equation **3x² – 6x + 1 = 0**.
Calculate the value of the **discriminant.** Use: $\triangle$ = b²-4ac

16. An arithmetic sequence is given <4,7,10,13,...>

a. Find the 8th term.   Use: t_n= a+(n-1)d
b. Find the sum of the first ten terms   Use: S_n= $\frac{n}{2}$ [2a+ (n-1)d]