LABASA SANGAM (SKM) COLLEGE

YEAR 12

MATHEMATICS

WORKSHEET # 2

STRAND 2 ALGEBRA

1. An arithmetic sequence is defined by $T(n) = 4n - 1$

   What is $\sum_{n=1}^{24} T(n)$ equal to?

   A. 1176 B. 300 C. 95 D. 24

2. Which of the following sequences is described by the formula $t_n = 2 + 2n^2$?

   A. 1, 2, 3, 4 B. 4, 8, 12, 16

   C. 4, 10, 20, 34 D. 4, 10, 21, 36

3. The first term and the sixth term of an arithmetic sequence are -4 and 21 respectively.

   The fifth term of the sequence is

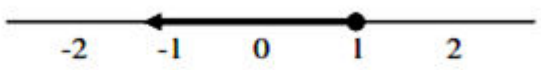
   A. 16 B. 9.6 C. 5 D. 3.4

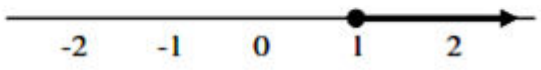
4. The algebraic fraction $\frac{x^2+2x}{x^2-2x-8}$ when simplified is equal to

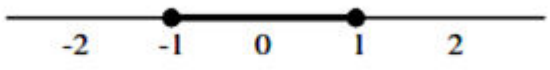
   A. $\frac{x+2}{x-4}$ B. $\frac{x-2}{x-4}$

   C. $\frac{x}{x-4}$ D. $\frac{x}{x+2}$

5. The solution set for $9 - 3x \geq 6, x \in R$ is best represented by

   A.
   

   B.
   

   C.
   

   D.
   

6. If the function $f(x) = -x^3 - 3x^2 + bx + 5$ has a remainder of $-\mathbf{2}$ when divided by $x + 2$, what is the value of b?

   A. -6 B. $3/2$ C. -2 D. 6

7. Use the quadratic formulasolve the equation: $3x^2 = -4x + 6$ **(2 marks)**

8. A 100L container of toxic waste is buried in a landfill. Each year some of the contents leak into the surrounding water table. The amount leaking (in litres), each year follows a geometric sequence as shown below.

   Goemetricsequence:< 15, 12, 9.6,……>

   a. Calculate the amount of toxic waste that leaks over a very long period of time

   (1marks)

   b. How much toxic waste will remain in the container after 10 years

   (2 marks)

9. Make x the subject of the formula $y = \frac{3x+1}{x-5}$ **(2 marks)**

10. Solve for x in$\frac{3x+1}{3} = \frac{6x-5}{4}$ **(2 marks)**

11. The cost of constructing a concrete footpath is equal to the cost of labour plus the cost of the concrete. The cost of labour is 4 times the cost of the concrete.

    i. If x is the cost of the concrete, then write an equation for the total cost of constructing the footpath. **(1 mark)**

    ii. If the cost of the concrete is $112, then determine the cost of labour **(1 mark)**

12. The first term of an arithmetic sequence is 7 and its ninth term is -33.

    i. Find the common difference **(2 marks)**
    ii. Calculate the sum of the first twelve terms of the sequence **(2 marks)**

13. A geometric sequence is given as < 2, 4, 8, 16,……>
    i. Find the 5^{th} term **(1 mark)**
    ii. Calculate the sum of the first 15 terms **(1 mark)**