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Mechatronics
MATHS 101
19/3NO5/023

1 1st term = a

$T_2 = a+d$

$T_3 = a+2d$

$T_1 + T_2 + T_3 = a+(a+d)+(a+2d)$

$18 = 3a+3d$ --- ①

$206 = a^2 + (a+d)^2 + (a+2d)^2$

$a^2 + a^2 + 2ad + d^2 + a^2 + 4ad + 4d^2$

$206 = 3a^2 + 6ad + 5d^2$ --- ②

from eq i

$18 = 3(a+d)$

$a+d = 6$ -- 3

from eq 3

$a = 6-d$ -- 4

Substituting eq 4 in 2

$206 = 3(6-d)^2 + 6(6-d)d + 5d^2$

$206 = 3(36-12d+d^2) + 36d - 6d^2 + 5d^2$

$206 = 108 + 2d^2$

$98 = 2d^2$

$d^2 = 49$

$d = 7$

Substituting the value of d in eqn (3)

$a+7 = 6$

$a = -1$

$T_2 = -1+7 = 6$

$T_3 = -1+(7)2 = 13$

the numbers are

-1, 6 and 13 //

2 $T_1 = a$

$T_2 = ar$

$T_3 = ar^2$

$28 = a + ar + ar^2$ -- (1)

$512 = a \times ar \times ar^2$

$512 = a^3r^3$

From Eq (2)

$\sqrt[3]{512} = ar$

$ar = 8$

$a = 8/r$ -- 3

Substituting Eq 3 in 1

$28 = 8/r + \frac{8}{r} \times r + \frac{8}{r} \times r^2$

$28 = 8/r + 8 + 8r$

$28 = \frac{8 + 8r + 8r^2}{r}$

$28r = 8 + 8r + 8r^2$

$20r - 8r^2 = 8$

$-8r^2 + 20r - 8 = 0$

$8r^2 - 20r + 8 = 0$

$8r^2 - 16r - 4r + 8 = 0$

$8r(r-2) - 4(r-2) = 0$

$(8r - 4)$ or $(r-2)$

$r = 1/2$ or $r = 2$

Sub r into Eq 3

When $r = 1/2$

$a(1/2) = 8$

$a = 16$

$T_1 = 16$

$T_2 = 16(1/2) = 8$

When $r = 2$

$a(2) = 8$

$a = 4$

$T_3 = 16(1/2)^2 = 4$

$T_1 = 4$

$T_2 = 4(2) = 8$

$T_3 = 4(2)^2 = 16$

the numbers are

16, 8, 4

or

4, 8 and 16