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**DEPARTMENT: MECHANICAL ENGINEERING**

**COURSE: MAT 101**

**QUESTION 1 SOLUTIONS**

Let the 3 numbers be a, (a+d), (a-d)

sum of numbers is 18:

=> a + a + d + a - d = 18

=> a + a + a + ~~d~~ - ~~d~~ = 18

=> 3a = 18

a = 6

sum of their squares is 206:

=> a2 + (a+d)2 + (a-d)2 = 206

since a = 6,

=> (6)2 + (6 + d)2 + (6-d)2 = 206

=> 36 + 36 + d2 + 36 + d2 = 206

=> 108 + 2d2 = 206

=> 2d2 = 98

d2 = 49

d = 7

Therefore, a = 6 and d = 7

hence, the 3 numbers are:

a = 6

a + d = 13

a - d = -1

**QUESTION 2 SOLUTIONS**

Let the numbers in the GP be a, ar, a/r

product of numbers

=> a (ar) (a/r) = 512

a3 = 512

a = 8

sum of numbers

=> a + ar + a/r = 28

but a = 8

hence,

=> 8 + 8r + 8/r = 28

=> 8 + 8r² = 20r

=> 8r² - 20r + 8 =0

=> 8r² - 16r - 4r + 8 =0

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

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

Therefore, r = 2 or r=1/2

Now , the three numbers are 4,8,16.