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MAT 101

ELECT/ELECT ENIMMERING

2) Find three numbers in GP whose sum is 28 and
The sum of 3 numbers in a AP is 18. The sum of
whose product is 512. The sum of
their squares is 206. Find the numbers

Solution

Let the three numbers be a, ar, ar^2

where r is the common ratio

$$a + ar + ar^2 = 28 \text{ and } a^3 r^3 = 512$$

$$ar = 8 \rightarrow ar^3 = 512$$

Divide both side by square root of 3

$$\sqrt[3]{a^3} \cdot \sqrt[3]{r^3} = \sqrt[3]{512}$$

$$ar = 8$$

$$a + ar^2 = 20$$

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

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

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

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

$$r = \frac{1}{2}, r = 2$$

2.) Find 3 numbers in GP whose sum is 28 and

$$2a = 8, 2 \quad a = 4$$

$$a, ar, ar^2 = 4, 4 \times 2, 4 \times 2^2 \\ = 4, 8, 16$$

2) Find 3 numbers in GP whose sum is 28 and

The sum of 3 numbers in AP is 18. The sum of
their squares is 206. Find the numbers

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

Sum of the three numbers = 18

$$a-d + a + a+d = 18$$

$$3a = 18$$

$$a = 6$$

Sum of their squares = 180

$$(a+d)(a-d)^2 + a^2 + (a+d)^2 = 180$$

$$(6+d)^2 + 36 + (6+d)^2 = 180$$

$$36 + a^2 - 12d + 36 + 36 + d^2 + 12d = 180$$

$$2a^2 = 180 - 108$$

$$2d^2 = 72$$

$$d^2 = 36$$

$$d = 6$$

$$\therefore a = 6 \quad d = 6$$

$$a - d = 0$$

$$a = 6$$

$$a + d = 12$$

\therefore 3 numbers in ascending order are 6, 6, 6