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Elect/Elect Engineering

3.) Form an equation whose roots are $\frac{1}{2}$ and $\frac{3}{2}$

$$\alpha = \frac{1}{2} \quad \beta = \frac{3}{2}$$

$$\text{Sum of roots } (\alpha + \beta) = \frac{1}{2} + \frac{3}{2} = \frac{2+3}{2} = \frac{5}{2} = 2\frac{1}{2}$$

$$\text{Product of roots } (\alpha \cdot \beta) = \frac{1}{2} \times \frac{3}{2} = \frac{3}{4}$$

Formation of quadratic equation

$$x^2 - (\text{Sum of roots})x + \text{product of roots} = 0$$

$$x^2 + 2x + \frac{3}{4} = 0$$

2.) Find the sum of all the terms in arithmetic progression

180, 175, 170, ... 25? Solution

The arithmetic progress has common difference -5

The number of terms is

$$\frac{180 - 25}{5} + 1 = 32$$

The average term is the same as the average of the first and last terms, namely

$$\frac{180 + 25}{2} = \frac{205}{2}$$

so the sum of series is

$$32 \cdot \frac{205}{2} = 16 \cdot 205 = 3280$$

1. I couldn't solve question 1. I'll read further