

Notes 15.2 Sums and Products of Zeros

1. $f(x) = 5x^3 - 33x^2 + 58x - 24$

Find the zeros.

Factor out the leading coefficient 5 from the equation.

$$z_1 + z_2 + z_3 =$$

$$z_1 z_2 z_3 =$$

$$z_1 z_2 + z_1 z_3 + z_2 z_3 =$$

If $p(x) = ax^3 + bx^2 + cx + d$ has zeros $z_1, z_2,$ and z_3 then

$$z_1 + z_2 + z_3 = -\frac{b}{a} \quad \text{sum of the zeros}$$

$$z_1 z_2 z_3 = -\frac{d}{a} \quad \text{product of the zeros}$$

$$z_1 z_2 + z_1 z_3 + z_2 z_3 = \frac{c}{a} \quad \text{sum of the pairwise products of the zeros}$$

2. In a cubic function, if the three zeros are $x = -1.5, x = 1$ and $x = 5$, write an equation where the leading coefficient is 1.

Find a particular equation of the cubic function, if the leading coefficient equals 1.

3. Sum of zeros = 9

Product of zeros = 24

Sum of pairwise products = 26

4. If two of the zeros of a cubic function are $x = 1$ and $x = -3 + i$, write an equation where the leading coefficient is 1.