

$$P(x) = (x^3 - 2x^2 + x)(x^2 - 8x + 25)^3$$

**Answer:**

$$x = 0$$

- multiplicity 1

$$x = 1$$

- multiplicity 2

$$x = 4 + i3 \quad - \text{ multiplicity } 3$$

$$x = 4 - i3 \quad - \text{ multiplicity } 3$$

(the total number of roots is equal to the degree of the polynomial)

$$P(x) = x(x - 1)^2 (x^2 - 8x + 25)^3$$