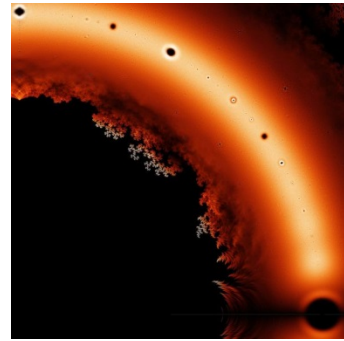


## 5.7 Polynomial Roots Revised

### *Practice Tasks*

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#### **I. Concepts and Procedures**

1. Find all solutions to the following quadratic equations, and write each equation in factored form.

$$x^2 + 25 = 0$$

$$-x^2 - 16 = -7$$

$$(x + 2)^2 + 1 = 0$$

$$(x + 2)^2 = x$$

$$(x^2 + 1)^2 + 2(x^2 + 1) - 8 = 0$$

$$(2x - 1)^2 = (x + 1)^2 - 3$$

$$x^3 + x^2 - 2x = 0$$

$$x^3 - 2x^2 + 4x - 8 = 0$$

2. The following cubic equations all have at least one real solution. Find the remaining solutions.

$$x^3 - 2x^2 - 5x + 6 = 0$$

$$x^3 - 4x^2 + 6x - 4 = 0$$

$$x^3 + x^2 + 9x + 9 = 0$$

$$x^3 + 4x = 0$$

$$x^3 + x^2 + 2x + 2 = 0$$

3. Find the solutions of the following equations.

$$4x^4 - x^2 - 18 = 0$$

$$x^3 - 8 = 0$$

$$8x^3 - 27 = 0$$

$$x^4 - 1 = 0$$

$$81x^4 - 64 = 0$$

$$20x^4 + 121x^2 - 25 = 0$$

$$64x^3 + 27 = 0$$

$$x^3 + 125 = 0$$

## II. Reasoning

1. Find a polynomial with integer coefficients that satisfies the given conditions
  - a.  $P$  has degree 2 and zeros  $1 + i$  and  $1 - i$ .
  
  
  
  
  
  
  
  
  
  
  - b.  $Q$  has degree 3 and zeros 3,  $2i$  and  $-2i$ .