1. Convert each equation from polar to rectangular or rectangular to polar form and graph.
   (a) \( x^2 + y^2 = 10x \)
   (b) \( r = 6 \sin \theta \)
   (c) \( x^2 + y^2 = 36 \)
   (d) \( y = \frac{\sqrt{3}}{2} x \)

2. Plot each point in the complex plane, and convert between rectangular and polar form.
   (a) \( \frac{5\sqrt{3}}{2} + \frac{5}{2} i \)
   (b) \( \sqrt{34} e^{59.04^\circ i} \)
   (c) \( 3 e^{270^\circ i} \)
   (d) \( -\frac{5\sqrt{2}}{2} + \frac{7\sqrt{2}}{2} i \)

3. Answer each question about complex numbers by converting to polar form to simplify computation.
   (a) \( w_1 = e^{30^\circ i}, \ w_2 = e^{150^\circ i}, \ w_3 = e^{270^\circ i} \)
   (b) \( z_1 z_2 = 32 e^{45^\circ i}, \ \frac{z_1}{z_2} = 2 e^{5^\circ i} \)
   (c) \( -8 - 8\sqrt{3} i \)
   (d) \( (4 e^{15^\circ i})^2 = 4^2 e^{30^\circ i} = 16 e^{30^\circ i} = 8\sqrt{3} + 8i \)

4. Solve the following systems of equations by graphing.
   \( x = 2, \ y = -1 \)

5. Solve the following systems of equations using augmented matrices and row reduction.
   \( x = -2, \ y = 0 \)
   \( x_1 = -12 - 5x_3 \)
   \( x_2 = 7 + 3x_3 \)
   \( x_1 = 2, \ x_2 = 1, \ x_3 = -1 \)
   No Solution

6. A piggy bank contains 30 coins worth $1.90.
   (a) 8 dimes and 22 nickles.
   (b) \( d = 8 - 4q \) and \( n = 22 + 3q \)

7. Evaluate each determinant.
   \[ \begin{array}{cc} 45 & -54 \\ 24 & \end{array} \]

8. Find the first four terms of each sequence.
   (a) \( a_n = \frac{1}{2}, 1, 4, 25, \ldots \)
   (b) \( a_0 = 0, a_1 = 1, a_2 = 3, a_3 = 7 \)
   (c) \( a_0 = -1, a_1 = -1, a_2 = -1, a_3 = -1 \)

9. Find the general term of a sequence whose first four terms are given below.
   (a) \( a_n = n^n \)
   (b) \( 7(-1)^n \)
   (c) \( (-1)^{n+1} x^{3n+1} \)

10. Write each series in expanded form, without sigma notation.
    (a) \( x^2 + \frac{1}{2} x^3 + \frac{1}{3} x^4 \)
(b) $1 - 9 + 25 - 49 + 81$

11. Write each series using sigma notation with the index of summation $k$ starting at $k = 1$.

(a) $\sum_{k=1}^{4} k^3$

(b) $\sum_{k=1}^{4} \frac{(-1)^{k+1}}{k}$