2. Consider the polynomial \( P(x) = 2x^3 - 3x^2 - 4x - 15 \).
   
i. Show that \( x - 3 \) is a factor of \( P(x) \).  
   
ii. Determine the other zeros of \( P(x) \).  

Answer:

ii. Is \( P(x) \) divisible by \( x + 1 \)?  
   Circle one: YES NO  
   In one sentence say why or why not.  

3pts
3. Solve the following equations for $x$:

i. $\frac{x-2}{3} + \frac{x}{x+2} = 0$  
   
   **Answer:**

ii. $x - \sqrt{3x} + 1 = 0$  
   
   **Answer:**
4. Consider the points \((-1, 1)\) and \((7, 7)\).

i. Find the distance between these points. 

Answer:

ii. Find the coordinates of the midpoint of the line segment that joins these points.

Answer:

iii. These points are the endpoints of a diameter of a circle. Write the equation of the circle.

Answer:
5. Consider the quadratic function $f(x) = x^2 + 2x - 3$.

   i. Find the vertex. 3pts

   ii. Determine the $x$-intercepts and the $y$-intercepts of the graph of $f(x)$. 5pts

   iii. Graph the function $f$ below. Be sure to label the vertex. 5pts