1. Use the graph below to answer the following questions.

a. Maximum ________________

b. Minimum ________________

c. Interval(s) where Increasing ______________________

d. Interval(s) where Decreasing ______________________

e. Domain ________________

f. Range ________________

g. x-intercept(s): ________________

h. y-intercept(s): ________________

i. \( f(-1) + f(2) = \) ________________

j. When \( f(x) = 4 \), Find \( x= \)

k. Continuous or Discontinuous? Why?
2. Graph each function on the same graph below:

a. \( f(x) = (x+2)^2 - 4 \)

b. \( g(x) = |(x + 2)^2 - 4| \)

c. \( h(x) = |(x + 2)^2 - 4| - 2 \)

d. Write the piecewise function for \( h(x) \)

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3. Using the function \( f(x) = |x - 3| + 5 \) for the following problems:

a. \( f(4) = \) _____

b. \( f(-5) = \) _____

c. \( f(x) = 1, x = \) _____ and \( x = \) _____

d. \( f(x) = 7, x = \) _____ and \( x = \) _____
3. Graph the piecewise function:

\[ f(x) = \begin{cases} 
-2x & \text{if } x \leq -3 \\
-x + 3 & \text{if } -3 < x < 0 \\
3 & \text{if } x \geq 0 
\end{cases} \]

4. Graph the following function and give the piecewise function

\[ f(x) = |x - 2| - 3 \]

**Piecewise Function:**

a. \( f(2) = \) 

b. \( f(6) = \)
5. Show the inverses to the following function through equations, tables, and graphs. Please label your graphs showing which is the original function and which is the inverse:

a. \( f(x) = 2x - 2 \)

Inverse: \( f^{-1}(x) = \)

<table>
<thead>
<tr>
<th>( x )</th>
<th>( f(x) )</th>
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<tbody>
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6. Solve each function to find its inverse.

a. \( g(x) = x^2 + 4 \)

Inverse: \( g^{-1}(x) = \)

b. \( h(x) = -3x - 6 \)

Inverse: \( h^{-1}(x) = \)

c. \( j(x) = \frac{1}{2}x + 8 \)

Inverse: \( j^{-1}(x) = \)

d. \( p(x) = (1, 2), (3, -1), (9, 7), (-6, 5), (4, \frac{1}{2}) \)

Inverse: \( p^{-1}(x) = (\_, \_)(\_, \_)(\_, \_)(\_, \_)(\_, \_) \)