1. Determine whether the graph is that of a function. If it is, use the graph to find the following:

Function: \text{yes} \quad \text{Range: } [0,3] \quad \text{Domain: } [-4,4]
Symmetry: y-axis \quad x:\text{-intercepts: } -2,2 \quad y:\text{-intercepts: } 3
What is f(-2): \quad 0 \quad What is f(4): \quad 2
For what values of x does f(x) = 3? \quad \underline{0} \quad \underline{4}
How often does the line y = 2 intersect the graph?

2. Determine whether the graph is that of a function. If it is find the following:
   a) Domain and range
   b) The intercepts, if any
   c) Any symmetry with respect to the x-axis, y-axis, or the origin

\begin{align*}
d &= [-\pi, \pi] \\
r &= [-1,1] \\
c &= x = -\pi, 0, \pi \\
y &= 0 \\
s &= \text{origin} \\
\text{Not a function} \\
d &= (-\infty, \infty) \\
r &= (0,0) \\
i &= x = 3, 2 \\
y &= 2 \\
s &= \text{none} \\
\end{align*}
3. \( f(x) = \frac{x^2 + 2}{x + 4} \)
   a) Is the point \((1, \frac{3}{5})\) on the graph of \(f\)? \text{yes}
   b) If \(x = 2\), what is \(f(x)\)? What point is on the graph of \(f\)?: \(f(x) = 1 \quad (2,1)\)
   c) What is the domain of \(f\)? \(\exists x | x \neq -4\)
   d) List the \(x\)-intercepts, if any, of the graph of \(f\): none
   e) List the \(y\)-intercept, if there is one, of the graph of \(f\): \(\frac{1}{2}\)

4. \( f(x) = -3x + 5x \)
   a) Is the point \((1,2)\) on the graph of \(f\)? no
   b) If \(x = 2\), what is \(f(x)\)? What point is on the graph of \(f\)?: \(f(x) = 4 \quad (2,-4)\)
   c) If \(f(x) = -2\), what is \(x\)? What point(s) are on the graph of \(f\)?: \(x = 1 \quad (-1, -2)\)
   d) What is the domain of \(f\)? \(\mathbb{R}\)
   e) List the \(x\)-intercepts, if any, of the graph of \(f\): \(0 = x\)
   f) List the \(y\)-intercept, if there is one, of the graph of \(f\): \(0 = y\)

5. Find and simplify the difference quotient of \(\frac{f(x+h) - f(x)}{h}\) for the function \(f(x) = 4x^2 - 2x + 3\):

\[
\frac{8x + 4h - 2}{h}
\]

6. Reduce the rational expression to lowest terms:

\[
\frac{x - 7}{x^2 - 49}
\]

7. Solve the equation. Remember to check for extraneous solutions. \(\sqrt{20 - x} + x = 0\):

\[
x = -5
\]