AFDA Unit 1 Review – Absolute Value Functions

UNIT 1 – ABSOLUTE VALUE EQUATIONS

- To solve an absolute value equation:
  1. **ISOLATE** the absolute value.
  2. Write **TWO** equations. One will equal a **NEGATIVE** number.
  3. **SOLVE** both equations.

- Examples of solutions:
  1. Verbal: **WRITE** in words. (Example: \( x \) equals 2 or \( x \) equals \(-4\))
  2. Symbolic: Using **NUMBERS** and **SYMBOLS**. (Example: \( x = 2 \) or \( x = -4 \)) or \( x = \{2, -4\} \)
  3. Graphically: Graph solutions on a **NUMBER LINE**. (Example:

\[ \begin{array}{c}
-4 \\
2
\end{array} \]

- Graphing Absolute Value Equations:
  1. The \((h, k)\) form is \( y = a|x - h| + k \)
     a) \((h, k)\) is the **VERTEX**. (ALWAYS CHANGE \( h \) and KEEP \( k \).)
     b) \( a \) determines if the graph **OPENS UP/DOWN** (SLOPE TO THE **RIGHT**)
     c) The shape of the graph is a **V** or **Λ**

Solve for \( x \) and then write the solution verbally, graphically, and symbolically.
1. \(|3 - x| = 10\)  
2. \(2|4x - 5| + 3 = 21\)

Verbally: ___________________________  
Graphically: ________________________
Symbolically: ______________________

Verbally: ___________________________  
Graphically: ________________________
Symbolically: ______________________
3. \(-2|5x + 7| \leq -12\)  

Verbally:  
Graphically:  
Symbolically:  

4. \(2|x - 7| + 8 = 6\)  

Verbally:  
Graphically:  
Symbolically:  

**Graph the following absolute value equations.**

5. Graph \(y = |x - 2| + 3\)

6. Graph \(y = \frac{2}{3}|x + 3| - 1\)

7. Graph \(y = -2|x - 1|\)

8. Graph \(y = -\frac{1}{2}|x| + 4\)