2.2 Absolute Value Transformations

General Form: \( y = a|x-h| + k \)

- \( y = |x - 2| \)
- \( y = |x| \)
- \( y = |x + 2| \)

Vertex: \((h, k)\)

- \( y = |x| + 3 \)
- \( y = |x| - 5 \)
General Form: \( y = a |x-h| + k \)

What Effect does the variable "k" have on the parent function?
- Effects the \( y \) value of the vertex.
- On the graph, it shifts it.
  - Left: neg. \( (\text{Add}) \)
  - Right: pos. \( (\text{Sub}) \)

Vertex: \( (h, k) \)

What Effect does the variable "k" have on the parent function?
- Effects the \( y \) value of the vertex.
- On the graph, it shifts it.
  - Up: add
  - Down: subtract

\[ y = |x - h| \]

\[ y = |x| + k \]
2.2 Absolute Value Transformations

General Form: \( y = a|x-h| + k \)

- \( y = 2|x| \)
  - Vertex: \((h, k)\)

- \( y = -2|x| \)
  - Wider, compressed

- \( y = \frac{1}{3}|x| \)

- \( y = \frac{1}{3}|x| \)
  - Reflected over the x-axis
2.2 Absolute Value Transformations

General Form: \( y = a|x-h|+k \)

What Effect does the variable "a" have on the parent function?

If \( a > 1 \):
- Graph is narrower (stretched)
- Neg \( \rightarrow \) Flips over \( x \)-axis

Vertex: \((h, k)\)

What Effect does the variable "a" have on the parent function?

If \( a < 1 \):
- Graph is wider (compressed)

When \( a \) is neg., graph is reflected over the \( x \)-axis.