# Absolute Value Functions

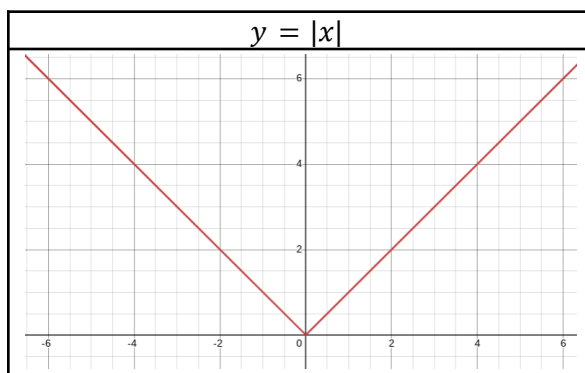| $y = |x|$ |
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An **absolute value function** is a function that contains the absolute value or modulus symbol("$|x|$"). The general form of an absolute value function is:

$$y = |x|$$

Where $|x|$ represents the magnitude of x. So $|-4|$ and $|+4|$ both equal 4 because both have a magnitude of 4

The general transformed absolute value functions is: $y = a * |(x - h)| + k$

| $y = 2|x|$ | $y = |x - 2|$ | $y = |x| + 2$ |
|---|---|---|
| If $|a| > 1$, the graph is vertically stretched. If $0 < |a| < 1$, the graph is vertically compressed. If $a < 0$, the graph is reflected over the x-axis. | If $h > 0$, the graph shifts to the right. If $h < 0$, the graph shifts to the left. *note that the $h$ is being subtracted; in the above expression $h = 2$ | If $k > 0$, the graph shifts up. If $k < 0$, the graph shifts down. |
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