

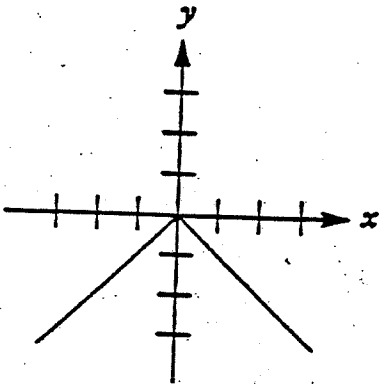
Activity 23 ▶ Name That Absolute Value Function

Name _____

In this lesson we see how to find the equation of an absolute value function by looking at its graph. (Note: This activity can only be done with graphing calculators that have an absolute value function.)

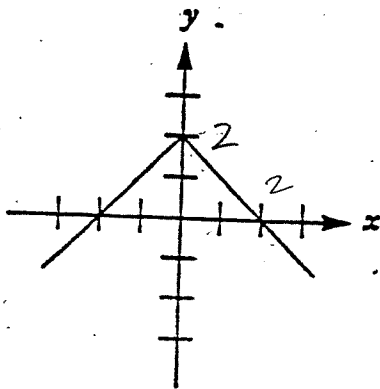
Examine each graph below and predict its equation in standard form ($y = a|x + b| + c$). Then use a graphing calculator to test your prediction. The first problem has been solved for you.

a.



Reasoning: The graph opens down, so the value of a is negative. The vertex is at the origin, so b and $c = 0$.
Equation: $y = -1|x + 0| + 0$ or $y = -|x|$

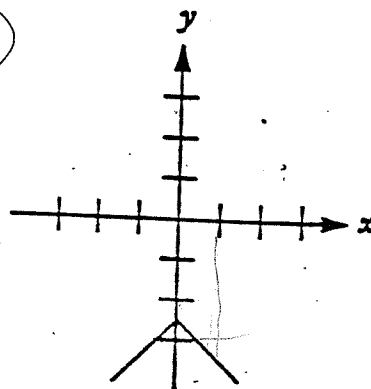
b.



$y = -1|x| + 2$

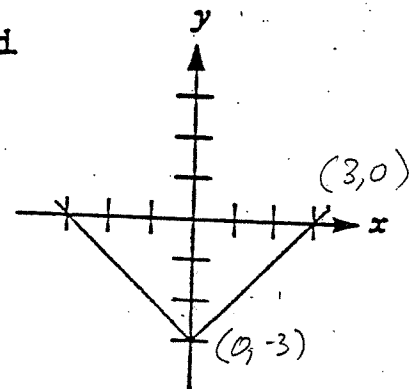
↑
slope

c.

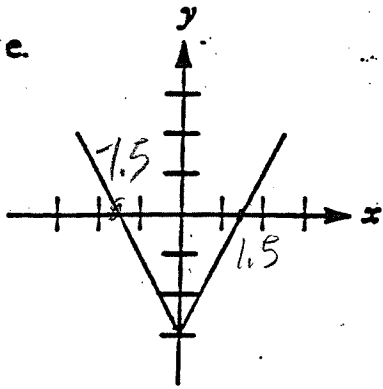


$y = -|x| - \frac{5}{2}$

d.

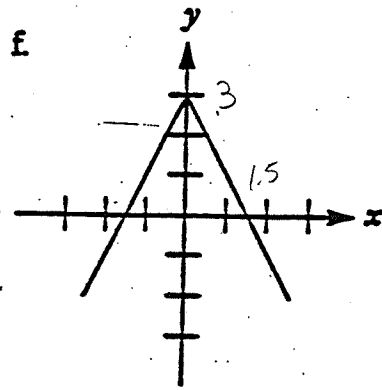


$y = |x| - 3$



$$y = 2|x| - 3$$

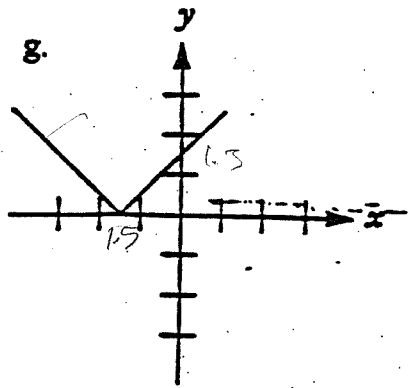
$$\text{slope} = \frac{3}{1.5} = 2$$



$$y = -2|x| + 3$$

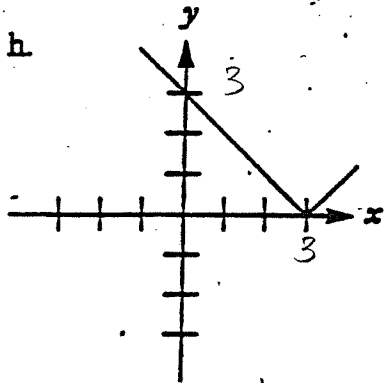
$$m = \frac{3}{-1.5} = -2$$

$$m = \frac{1-2}{0-1.5} = \frac{3}{1.5} = 2$$

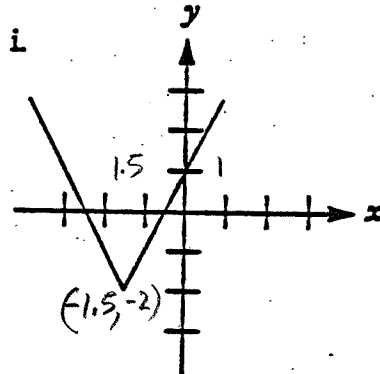


$$y = |x + 1.5|$$

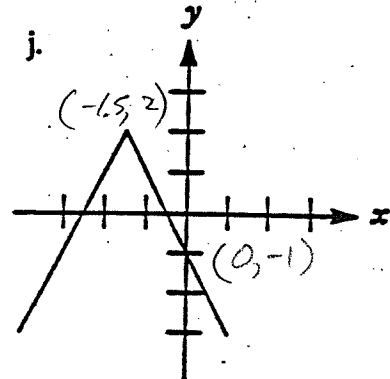
$$m = \frac{3}{-1.5} = -2$$



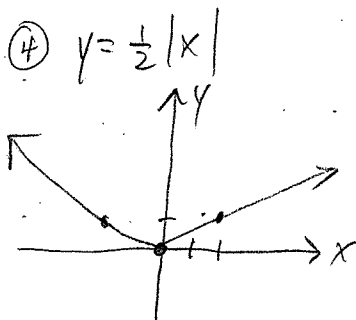
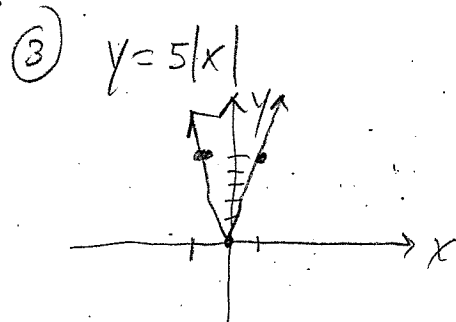
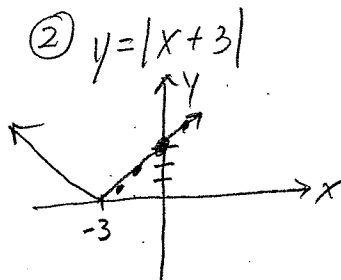
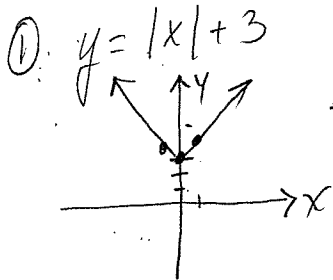
$$y = |x - 3|$$



$$y = 2|x + 1.5| - 2$$



$$y = -2|x + 1.5| + 2$$



$$y = |x - -3| + 0$$

\uparrow \uparrow
 x y

