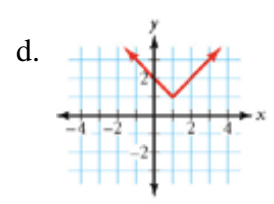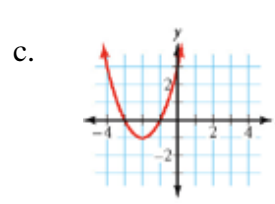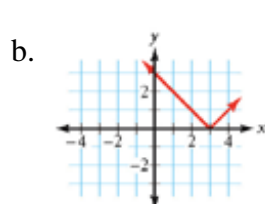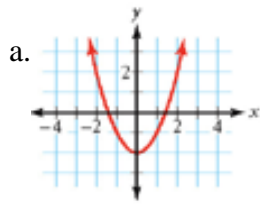1. Describe each graph as a transformation of $y = |x|$ or $y = x^2$. Then write its equation.

Example:
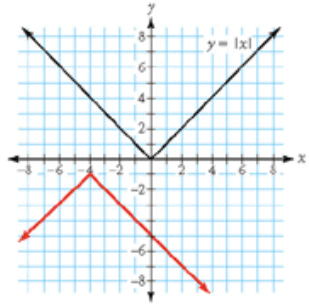
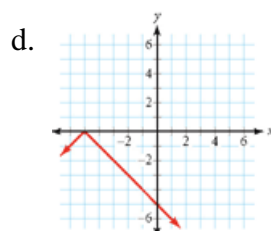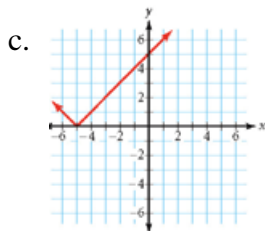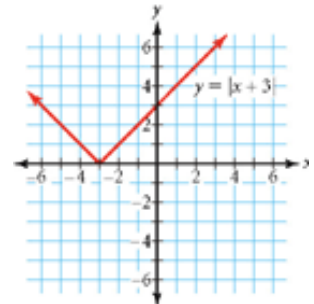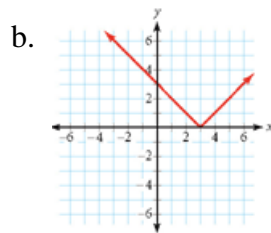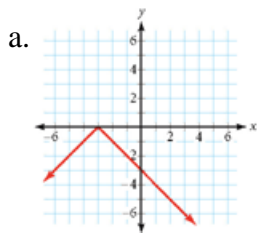Answer: Reflect the graph $y = |x|$ across the x-axis. Then, translate 4 units to the left and 1 unit down.

Equation: $y = -|x + 4| - 1$

a.

b.

c.

d.

2. Describe each graph below as a transformation of $y = |x + 3|$, shown at the right.

a.

b.

c.

d.

3. Write an equation for each transformation of the given parent function.

a. Transform the parent function $y = |x|$ by translating it to the left 5 and up 7 units.

b. Transform the parent function $y = x^2$ by translating it to the right 6 and then reflecting it across the x-axis.

c. Transform the parent function $y = x^2$ moving it down 3 units and to the left 10 units.

d. Transform the parent function $y = |x|$ by moving it down 2 units and reflecting it across the x-axis.

e. Transform the parent function $y = |x|$ by reflecting it across the x-axis, moving it to right 7 units and down 1 unit.

4. Describe how each equation transforms the parent graph $y = x^2$ or $y = |x|$.

a. $y = (x + 3)^2$ b. $y = |x - 1.5|$ c. $y = -x^2 - 5$

d. $y = (x - 2)^2 + 13$ e. $y = -|x + 9| - 8$ f. $y + 2.5 = |x - 4|$.

5. Use $f(x) = 2|x + 4| + 1$ to find the following:

a. f(5)   b. f(-6)   c. f(-2) + 3   d. f(x + 2)

6. A chemical reaction consumes 12% of the reactant per minute. A scientist begins with 500 grams of one reactant. So, the equation $y = 500 \, (0.88)^x$ gives the amount of reactant, y, remaining after x minutes.

    a. What does the number 0.88 tell you?   b. What does the number 500 tell you?

    c. How much reactant is remaining after 5 minutes?

7. This table shows the temperature of water in a pan set on a stove.

Time (min)	0	2	4	6	8	10	12	14	16	18
Temperature (°C)	22	29	36	44	51	58	65	72	80	87

    a. Find the equation of a line that models this data.

    b. How long will it take for the water to boil (100°C)?