

## Algebra Essentials and Applications Internet Activity

### ME1 Parabolas Investigations

1. Change the value of  $a$  from 1 to  $-1$  by successively clicking on the left arrow next to  $a$ . What happens to the graph as the value of  $a$  changes?

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- 2a. Reset the graph to its original settings. Change the value of  $c$  from 0 to 2. What happens to the graph?

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- b. Change the value of  $c$  to  $-1$ . What happens to the graph?

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3. Reset the graph to its original settings. State the values of  $a$ ,  $b$ , and  $c$  that make the original parabola open downward and be translated 3 units up. Test your answers.

$$a = \underline{\hspace{2cm}} \quad b = \underline{\hspace{2cm}} \quad c = \underline{\hspace{2cm}}$$

4. Reset the graph to its original settings. Changing  $a$  to other values (other than 1 and  $-1$ ) makes the curve open wider or narrower.

- a. Change  $a$  to 2. Describe what happens to the curve.

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- b. Change  $a$  to  $-3$ . Describe what happens to the curve.

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5. State the values of  $a$ ,  $b$ , and  $c$  that make the original graph open upward, three times as wide as the original, and translated 3 units down. Test your answers.

$$a = \underline{\hspace{2cm}} \quad b = \underline{\hspace{2cm}} \quad c = \underline{\hspace{2cm}}$$

6. Changing the constant  $b$  doesn't affect the curve as simply as changing  $a$  and  $c$  does. With  $a = 1$  and  $c = 0$ , experiment with changes in  $b$ . Describe how changing  $b$  affects the curve.

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