

1. Open the GSP document “quadratics.gsp.” Describe as fully as possible the graph of f .
2. Slide the blue dot labeled “a” and describe the effects on f . Be sure to explain both what changes and what doesn’t, and be sure to consider $a = 0$ and $a < 0$. (Note: the value of a is only approximate, so you need to think carefully about what you’re observing.)
3. Return a to the value 1. Slide the blue dot labeled “b.” You’ll have to click carefully to find it; it’s hidden under a red dot. Describe the effects on f .
4. Return b to the value 0. Slide the blue dot labeled “c.” Again you’ll have to click carefully to find it; it’s hidden under a red dot. Describe the effects on f .
5. Experiment further with changing values of a , b , and c combined. Describe as fully as possible the effects on f .
6. Push the button to investigate further: Study the value of the discriminant when f has no x -intercepts. When f has two x -intercepts.
7. What is the value of the discriminant when f has exactly one x -intercept, that is, when f is tangent to the x -axis? Remember, the measurements are rounded, so you’ll have to think carefully.
8. Push the button to investigate further: Slide the blue dot labeled “a” and describe the effects on f . Be sure to consider $a = 0$ and $a < 0$. (Note: the value of a is only approximate, so you need to think carefully about what you’re observing.)
9. Return a to the value 1. Slide the blue dot labeled “h.” You’ll have to click carefully to find it; it’s hidden under a red dot. Describe the effects on f .
10. Return h to the value 0. Slide the blue dot labeled “k.” Again you’ll have to click carefully to find it; it’s hidden under a red dot. Describe the effects on f .
11. Experiment further with changing values of a , h , and k combined. Describe as fully as possible the effects on f .