

1. Place this paper on an incline. Starting below the x-axis, roll a marble up and across the the y-axis. Repeat until you get a consistently repeatable arc. Sketch the arc. Roll the marble on the arc to confirm your path is correct.
2. Measure the distance from the y-axis to one x-axis intercept on the x-axis. This is the distance r.
3. Measure the distance from the x-axis to the y-axis intercept. This is k.
4. The equation for the curve is:

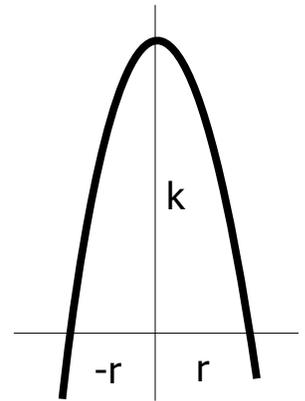
$$y = \frac{-k x^2}{r^2} + k$$

5. Teaming up with a partner, type your equation into Qalculate! on the computer in the form using the values of k and r you measured:

$$(-k x^2) / r^2 + k$$

6. From the File menu choose Plot and then click on add to see the graph.
7. Does the graph agree with the path of your marble?
8. Will the marble always follow this "parabolic" path?
9. Will balls thrown through the air follow a parabolic path?
10. What is the reason why marbles and balls do this?

y-axis



x-axis