

# Illustrating the Reflection Property of Parabola

The objective of this project is to demonstrate the fact that a ray of light emitted from the focus of a parabola will be reflected in the direction of the axis of the parabola upon hitting the parabola.

## Suggested Outline of Steps

- Use the parabola  $(y - k)^2 = 4p(x - h)$  where  $p$  is the distance from the focus to the vertex  $(h, k)$  of the parabola.  $p$ ,  $h$  and  $k$  will be parameters.
- draw a line segment from the focus to a point on the parabola. We shall call this point the point of incidence.
- compute the slope of the line segment.
- compute the slope of the tangent to the parabola at that point and find the tangent of the angle between them.
- Apply law of reflection and find the slope of the reflected line from the tangent of the angle in the previous step and the slope of the tangent line.
- use the slope in the previous step and the point of incidence to write equation and draw the reflected ray.
- your ray should end up being parallel to the axis if your steps are accurate.