Parabola Reflection Property
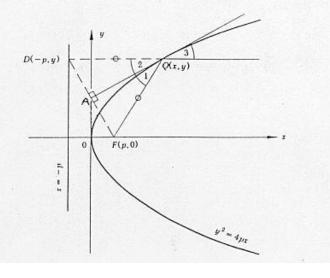
Given: the parabola y^2 = 4px, F is the focus, QA is tangent to y^2 = 4px at Q.

Prove: at any point Q, angle 1 = angle 3

Proof: Statements   Reasons

    1. y^2 = 4px   1. _____
        let m_1 = slope of QA
        let m_2 = slope of DF

    2. QD = QF   2. _____

    3. m_1 = y' = _____   3. _____

    4. m_2 = _____   4. Definition of slope

    5. So DF $\perp$ AQ   5. _____

    6. AQ = AQ   6. _____

    7. $\triangle$ADQ $\cong$ $\triangle$AFQ   7. _____

    8. $\angle 2$ = $\angle 1$ 8. _____

    9. $\angle 2$ = $\angle 3$ 9. _____

  10. $\angle 1$ = $\angle 3$ 10. _____

Elliptical Reflection Property

Given: an Ellipse

To Show that a line drawn form one focus to the ellipse would reflect to the other focus