1. (Without using calculus) Determine the slope (m) of the tangent line "y = mx + 2" to the parabola "y = x^2 + 5x + 6".

2. Let *f* be a real-valued function such that

$$f(x) + 2f\left(\frac{2002}{x}\right) = 3x$$

for all *x* > 0. Find *f(2)*.

Problem Solving Method 3:

Change the problem to one you know how to deal with

Example: Determine the slope (m) of the tangent line "y = mx + 2" to the parabola "y = x^2 + 5x + 6".

- What you might not know: Calculus
- What you do know: Algebra and Geometry

Normally, the *derivative* is used in this situation to find tangent slopes to a function, which is in this case a parabola. However, we can change the problem to one that is easier to deal with by simply observing the definition of a tangent line:

A tangent line intersects a function in only one spot
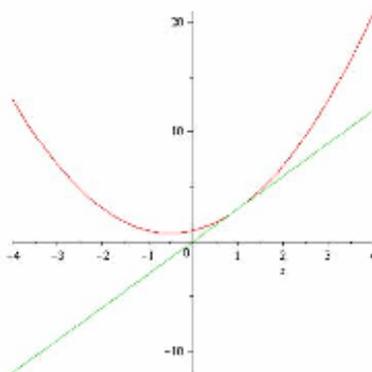
Thus, we can solve for the slope *m* by setting the equations y = mx + 2 and y = x^2 + 5x + 6 equal to each other and giving *m* a value that makes the solution a complete square.