

1096-VR-2177 **Robert M. Sulman*** (sulmanrm@oneonta.edu). *Proving Special Cases using Alternate Methods*. Preliminary report.

Sometimes a special case of a more general result can be proven using methods that may not be sufficient to prove the general fact. This approach has the advantage of (a) Bypassing a proof (of general result) not accessible to students of a certain mathematical level or (b) Highlighting the notions utilized in the alternate technique.

Examples are seen in a variety of topics. For instance:

(i) Determining the turning point(s) in the graph of (certain) rational functions without using Calculus (ii) Fermat's Little Theorem (iii) Special cases of Cauchy's Theorem for Finite Groups (iv) Sylow's Theorem (normal Sylow subgroup criteria)

Highlighted notions from above examples include the discriminant of a quadratic, congruence (modulo n) is preserved under multiplication, Lagrange's Theorem, group actions & the permutation representation, order of " ψ "(x) divides order of x when " ψ " is a homomorphism of finite groups, and the Class Equation.

Basic divisibility facts are reinforced in these examples as well. For instance: p does not divide $m!$ if p is a prime greater than m .

Being resourceful can be fun and strengthen one's understanding of connections within the material. (Received September 17, 2013)