

Integration by Hyperbolic Substitution

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Mathematics teachers constantly encourage their students to think independently. The study of integration in calculus provides an excellent opportunity to encourage inventive investigation. In contrast to differentiation, which is predominately mechanical, integration is a more creative process. One such possibility is offered by the study of the hyperbolic functions. After learning the trigonometric substitution technique of integration, students occasionally ask if the same integrals can be calculated by means of hyperbolic identities. Developing this approach provides an instructor with a variety of ways to enrich a second-semester calculus class.