

Climb Every Mountain: An Introduction to the Mountain Pass Theorem and its Applications to Time Scales

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The Mountain Pass Theorem and other basic symmetric results from critical point theory are introduced. We will see how these results can be used to determine the existence of solutions to difference equations. Eventual applications to time scales and further work will be discussed.

References and Literature for Further Reading

- [1] P. Rabinowitz, *Minimax Methods in Critical Point Theory with Applications to Differential Equations*, CBMS Regional Conference Series in Mathematics. 65 (1986).
- [2] Y. Jabri, *The Mountain Pass Theorem: Variants, Generalizations, and Some Applications*, 95 (2003).
- [3] Q.Q. Zhang, Existence of solutions for a nonlinear system with applications to difference equations, *Applied Mathematics E-Notes* 6 (2006) 153-158.
- [4] D. Bai, Y. Xu, Nontrivial solutions of boundary value problems of second-order difference equations, *Journal of Mathematical Analysis and Applications* 326 (2007) 297-302.