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## Therefore, the transform solution is

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# $u_t + 6uu_x + u_{xxx} = \zeta(t) - \gamma u_{t}$ $rac{1}{2}$ (20) $rac{2}{2}$



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# Zabusky and Kruskal (1965) studied the KdV equation using

the finite difference approximation [?]:



We use discretized Brownian motion, where W(t) is specified at discrete *t* values.



### [fontsize=] randn('state',100) T = 1; N = 500; dt = T/N; dW = sqrt(dt)\*randn(1.N); W = cumsum(dW);

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The other identity to confirm is  $< \exp(cW(t)) >= \exp(\frac{1}{2} < W^2(t) >).$  Dr. Herman Numerical Realizations of Solutions of the Stochastic KdV Equation

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mu=sqrt(2\*eps);

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Log(Amplitude) vs Log(Time) 

 Log(Amplitude) Vs Log(Time)
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### Log-log Plot for Rescaled Integral Solution

 Is=0.1 and y=0.11

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 Log-log Plot for Rescaled Numerical Solution

 [ε=0.1 and γ=0.1, 2000 Runs]

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When two solitons collide, they interact elastically. The exact solution for the two soliton equation is given by Contended to the Stochastic KdV Equation of Solutions of Solutions of the Stochastic KdV Equation of Solutions of Solutions of the Stochastic KdV Equation of Solutions of

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Two Soliton Solution of KdV (Zabusky-Kruskal Scheme)

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Two Soliton solution for  $\epsilon\text{=}.01$  and  $\gamma\text{=}.01$ 

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## R. L. Herman, "Solitary Waves," American Scientist, vol. 80, July August 1002