

Math 400

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1. Review of solution by separation of variables
2. Eigenfunction expansions and Sturm-Liouville theory
3. Parabolic (heat), elliptic (Laplace) and hyperbolic (wave) equations
4. Solution by integral transforms
5. Quasi-linear first-order equations
6. Shocks and applications to traffic flow

Optional text (none required): *Elementary Partial Differential Equations*, R. Haberman.