Ma221 outcomes

On completion of the course, the students should be able to

1. determine the critical points and their stability, sketch phase portrait and the graphs of autonomous ODEs

2. solve separable, linear, Bernoulli, and exact 1^{st}-order ODEs

3. find linearly independent solutions to constant-coefficient homogeneous linear ODEs

4. use undetermined coefficients and variation of parameters methods to find particular solutions to non-homogeneous linear constant-coefficient ODEs

5. model simple processes and phenomena

6. solve Cauchy-Euler equations

7. solve homogeneous linear systems of ODEs

8. solve eigenvalue problems arising in heat and oscillating problems

9. find Fourier series expansion of functions

10. use the separation of variables method to solve heat and wave equations

11. use Laplace transform for solving ODEs with discontinuous and delta-type right-hand side

12. find series solutions