B group task in calculus 2

Edited at 7am 20.3.2017.

Differential equations:

1. Explain differential equations.

2. Explain separable differential equations.

3. Solve exponential growth differential equations. Are they separable?

4. Solve logistic growth differential equations. Are they separable?

Ordinary differential equations:

5. Solve these differential equations.

a. xy’ - 2y = 0 b. 0 = - xy’ - 7y

c. y'' – 3y' + 2y = x

http://calculus12s.weebly.com/uploads/2/5/3/9/25393482/oscillatorydifferentialequationsolution18mar2017.docx

d. y'' – 3y' + 2y = sin(x)

e. y′ = y,y(0) = 1

f. y′ = 2y,y(0) = 1

g. P´ = P(1-P), P(0) = 1.

6. Use Euler method to solve differential equations.

7. Use integrating factor to solve differential equations.

8. Explain strange attractors.

How are strange attractors and fractals connected?

Use strange attractors in design.

https://en.wikipedia.org/wiki/Attractor

Partial differential equations:

9. Solve the string equation and the simplified Maxwell equations.

10. Solve the heat equation.

http://calculus12s.weebly.com/uploads/2/5/3/9/25393482/heat6equation6scanned.jpg

https://en.wikipedia.org/wiki/Heat\_equation

11. Use Fourier method to solve partial differential equations.

12. Explain Schrödinger equation.

https://en.wikipedia.org/wiki/Schr%C3%B6dinger\_equation

13. What is Dirac equation?

https://en.wikipedia.org/wiki/Dirac\_equation

Orthogonal polynomials:

14. Give the orthogonal polynomials number 1.

https://en.wikipedia.org/wiki/Orthogonal\_polynomials

Polar coordinates:

15. Draw these graphs in polar coordinates (angle A and radius R).

a. R = A. b. R = sin(A). c. R = 1 + sin (A).

https://www.desmos.com/calculator/ms3eghkkgz

Conic sections:

16. Write equation of ellipse with sized 1 and 2.

Quadric surfaces:

17. Write equation of ellipsoid with sized 1, 2 and 3.

Series:

18. Explain series.

Deadline: 25.3.2017.