A group task in calculus 2

Edited at 6am 13.3.2017.

No copying. Work independently.

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 d. xy′ - 2y = 0 e. 0 = - xy′ - 7y f. y′ = y,y(0) = 1 g. y′ = 2y,y(0) = 1

h. 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

Deadline: 18.3.2017.