B individual task in calculus 2.

Edited at 7am 20.3.2017.

s is your student number. k = s mod 10000. T = s mod 100. m = s mod 35. a = s mod 25.

L = s mod 10. $d\_{2}=\frac{T-L}{10}$. e = s mod 8. m7 = s mod 7. m6 = s mod 6. m4 = s mod 4. m3 = s mod 3.

Differential equations:

1. Find y(x) from

a. y´ = Ty.

b. kP´ = TP(k-P), P(0) = T

c. T + y2 + xyy´ = 0.

d. ky´´ + Ty´ + Ly = 0.

e. ky´´ + Ty´ + Ly = Tx.

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g. ky´´ + Ty´ + Ly = Tsin(x).

2. Solve: Ty'' + my' + Ly = kx

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Orthogonal polynomials:

3. Give the orthogonal polynomials number L.

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

Polar coordinates:

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

a. R = mA. b. R = sin(LA). c. R = 1 + sin (TA).

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

Parametric curves:

2.2.I. Plot the curve.

x = cos(at)-cos(Tt)sin(mt)

y = sin(mt) – sin(Tt)

z=0

0 t 2π

http://www.math.uri.edu/~bkaskosz/flashmo/parcur/

Conic sections:

5. Write equation of ellipse with sized T and k.

Quadric surfaces:

6. Write equation of ellipsoid with sized T, k and s.

**Series:**

7. What is the hangover of *s* meter blocks?

8. Calculate

a.$\sum\_{c=1}^{T}\frac{(-1)^{c}}{c}$ b.$\sum\_{c=1}^{T}\frac{1}{c}$ c.$\sum\_{c=1}^{T}c^{-4} $d.$\sum\_{c=1}^{T}c^{-6} $e.$\sum\_{c=0}^{T}b^{c} $f.$\sum\_{c=1}^{T}c^{-2} $g.$\sum\_{c=1}^{T}c^{-3} $h.$\sum\_{c=0}^{T}\frac{(-1)^{c}}{2c+1}$ i.$\sum\_{c=1}^{T}c^{-5}$

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http://calculus12s.weebly.com/uploads/2/5/3/9/25393482/inverse6powers.txt

9. Find $\sum\_{c=0}^{\infty }T^{-c}$

10. Find the convergence radius and the sum.

$$\sum\_{c=0}^{\infty }\left(Tx\right)^{c}$$

11. Calculate $\sum\_{c=0}^{\infty }C(p,c)\left(Tx\right)^{c}$

Games:

12. Join Dota2 gaming competition.

http://www.dota2.com/international/overview/

13. Play chess at chess.com

Project:

14. Improve your project.

Write the proposal.

Prepare to present your project to a native English speaking doctor of science.

Deadline: 25.3.2017.