**4 group task in calculus:**

Edited at 4pm 20.6.2017.

**Collinearity and coplanarity:**

1. Explain collinearity of 2 vectors.

2. What is coplanarity of 3 vectors?

**Integration techniques:**

3. Explain integration by substitution.

4. What is integration by parts?

5. Explain Heaviside Method.

**Differential equations:**

6. Explain Euler method.

**Heat Transfer Equation:**

7. Solve the Heat Transfer Equation.

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

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

8. Explain **Maxwell Equations.**

**Vectors:**

9. Work out.

a. div **curl** = . . . b. **curl grad** = . . . c. div **grad** = . . .

$∇=i\frac{∂}{∂x}+ j\frac{∂}{∂y}+k\frac{∂}{∂z}$, **curl** **V** = $∇×V$, div **V** =$∇ $. $V$, **grad** S = $∇ S$

10. **Series and numerical integration**.

Give Taylor series truncation error in Lagrange form.

Give left rectangles rule formula and integration error bound.

Give right rectangles rule formula and integration error bound.

Give mid rectangles rule formula and integration error bound.

Give trapezoidal rule formula and integration error bound.

Give Simpson rule formula and integration error bound.

**Deadline: 30.6.2017.**