**MATHEMATICS-1** **Test2-B** **NAME: .....**

**24 November 2010**

| 1. (4p) | 2. (6p) | 3. (9p) | 4.(5p) | 5. (6p) | 6. (5p) | Th. (5p) | Σ (Max 40p) |
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Corrected by: ……

1. Let be given the points $P_1=(0, 1, 2)$ and $P_2=(3, 5, 6)$
   a.) Find the equation of the plane passing through $P_1$ and perpendicular to the vector $\overrightarrow{P_1P_2}$ !
   b.) Find the equation of the line passing through the point $P_2$ and parallell with the normal vector of the plane given in question a.) !

2. Find the following integrals: a.) $\int 6\cdot\sqrt[3]{x}+\frac{1}{x+3}\,dx$ ; b.) $\int (3x+5)\cdot\cos(2x)\,dx$;

3. Find the following integrals

a.) $\int \frac{4-x}{x\cdot(x+2)^2\cdot}\,dx$ ; b.) $\int_0^1 \frac{4x^3+2}{x^4+2x+3}\,dx$

4. Find the area between $f(x)=\frac{1}{x}$ and $g(x)=\frac{x}{4}$ over the interval [1 ; 3] !

5. Find the volume of the solid given by the rotation of $f(x)=\frac{2\ln x}{\sqrt{x}}$ over $[1;e]$ about the *x*-axis!

6. Find the following improper integral: $\int_2^{10} \frac{1}{\sqrt[3]{(x-2)^4}}\,dx$

**Theoretical question:**

Let be the function *f(x)* continuous on the interval *[a;b]*.

Show that there exists $\xi\in[a;b]$ such that $\int_a^b f(x)\,dx = f(\xi)\cdot(b-a))$