The exam will cover from Chapter 13 to 14.
There will be a review at next Tuesday November 18.

The MIDTERM II EXAM WILL BE at the regular classroom of the Thursday Nov 20.

1.Find the tangent plane of $x^2 + y^2 + 2z^2 = 4$ at $(1,1,1)$.
2. Find the direction in which the function $z = 2x + \sin(2y - x)$
increases and decreases the most from the point $(0,0)$.
3.Find the directional derivative of $z = f(x,y) = 4x^2 + y^2$
in the direction of i+j at the point $(1,1)$. What is physical meaning of this derivative? 4. Compute: $(x^y)_{xy}$.
5. Compute the integral $\int \int_{x^2+4y^2\leq 4}(x + y^2)dxdy$.

6. Approximate $\sqrt{99}$ and $\sin(46^o)$. You have to show the formula. An answer from calculate will yield 0 point.
7. Find the maximum of xyz if $x + y + z = 1$ and positive.
8.Find maxima and maximal value of the function $2x - y$ inside the unit circle.
9. Find the integral $\int \int \int_D x^2 dvol$, where D is the upper half unit ball
$x^2 + y^2 + z^2 \leq 1$, $z \geq 0$.

10. Find maxima and maximal value of the function $x^2 + 2y$ in the triangle
$x + 3y = 1, y = 0$ and $x = 0$.
11. Find the integral $\int \int \int_D x dvol$, where D is the part of the unit ball
$x^2 + y^2 + z^2 \leq 1$ and $x \geq 0, y \geq 0, z \geq 0$.

12. Find the extrema of the function $x^2 y$ in the triangle bounded by the
$x - axis$
and $y - axis$ and the line $x + y = 1$.
13. Compute $\int \int_D x^2 y dx dy$, where D is the upper half disk.

14. Write down the change of variable formulae for
spherical and cylindrical coordinates.