

Review Sections at UTLC

Final Exam Review for M408D

November 29 - December 2

Mon/Tue/Wed/Thur

5:00 - 6:15 p.m.

Students will need to come to the UTLC, Mon-Fri, 9-5 to sign up.

Professor Wang's office hours next week Tuesday 10am-5pm.

My tentative office hours Monday, Tuesday, and Wednesday 9-12am or by appointment.

Please email me before you come as I may have to leave town.

Review Questions 2

Partial Derivatives

What is a function? What is a graph?

What is a partial derivative? What does it represent geometrically? How do you find a tangent plane?

What is the general chain rule?

What is the Gradient Vector? What is a directional derivative?

How do we get the minimum and maximum values for a function over a domain?

What is a Lagrange multiplier? How does it help with max-min problems?

Multiple Integrals

Can you evaluate a double integral?

Practice Exam part 2

Old Stuff

6. Consider the power series $g(x) = \sum_{n=1}^{\infty} \frac{(2x)^n}{n!}$

- What is the radius of convergence?
- Estimate $g(.01)$ to 2 places.
- What is $g'(x)$? Estimate $g'(.02)$ to 2 places.
- Let $G(x) = \int_{t=0}^x g(t)dt$. What is $G(.03)$ to 3 places?

7. Let $\vec{f}(t) = \langle t, -t^2, t^2 \rangle$ be the position of a particle at time t .

- At what t does the particle go through $(-2, -4, 4)$?
- Compute the velocity, speed, and unit tangent vector at this time.
- How far does the particle travel from $t=-1$ to $t=1$?

8. a) Find the distance from the plane $x + 2y + 3z - 2 = 0$ to the point $(0, 2, 3)$.

b) Find the intersection of $x + 2y + 3z - 2 = 0$ and $x - 3y + 2z = 0$

c) Find the distance from the line $\frac{x-3}{2} = \frac{y}{-2} = \frac{z+4}{2}$ to the point $(1, 1, 1)$.

New Stuff

9. Evaluate the integral $\int_{x=-1}^2 \int_{y=x}^{x^2} f(x, y)dydx$, where $f(x, y) = x^3y + y^2$.

10. Let $f(x, y) = 2 \sin x + \cos 3y$.

- Find the equations for the tangent planes at $x = \pi/2$, $y = 2\pi/3$ and $x = 3\pi$, $y = 0$.
- Give a vector normal to the curve at both of these points.

c) Which of these points is a critical point?