Math 251
Practice Test A for Chapter 11
Answers

1. Set $x = 0$. Limit is 1. Set $x = y$. Limit is 2.
2. $f_x = -y\sin(xy)\tan(xz^3) + z^3\cos(xy)\sec^2(xz^3)$.
   $f_{xy} = -\sin(xy)\tan(xz^3) - xy\cos(xy)\tan(xz^3) - xz^3\sin(xy)\sec^2(xz^3)$.
   $f_z = 3xz^2\cos(xy)\sec^2(xz^3)$.
   $f_{zz} = 6xz\cos(xy)\sec^2(xz^3) + 18x^2z^4\cos(xy)\sec^2(xz^3)\tan(xz^3)$.
3. 24.
4. $6x + y - z = 10$.
5. $x + 6y - 2z = 5$.
6. $f(2, 4) = -12$.
7. Maximim is $\sqrt{14}$. Minimum is $-\sqrt{14}$.
8. -1.
9. $(0, 0)$ is a saddle. $\left(\frac{2}{3}, \frac{2}{3}\right)$ is a minimum.
10. Easy.