Math 250B Assignment 1

Covers: Sections 11.7, 12.1-12.5
Due: Mon Sept 22 at 11:30am

INSTRUCTIONS:
This assignment will be marked for completion.
Solutions will be posted on the course website 24 hours after the deadline.
You may not copy the work of another person or AI.
Submit jpg or pdf files to the D2L Dropbox.

1. Is the surface a cone, cylinder, paraboloid, plane or sphere?

a) $z = 1 - x^2 - y^2$

b) $z = 1 - \sqrt{x^2 + y^2}$

c) $z^2 = 1 - x^2 - y^2$

2. Find f_x, f_y and f_z for $f = e^{2x}\cos(y - 3z) + z^2\sin(3x - 2y)$.

3. Find all points where the tangent plane to the surface is horizontal:
$z = 3x^2 + 5xy + 2y^2 - 3x - 2y + 7$

4. Find the absolute minimum of $z = 2x^2 - 2x + 3y$ over the region in the xy-plane bounded by $y = x^2$ and $y = 1$. Give the absolute minimum value and any points where it is achieved.