Here are a set of problems for my Calculus I notes. These problems do not have any solutions available on this site. These are intended mostly for instructors who might want a set of problems to assign for turning in. I try to put up both practice problems (with solutions available) and these problems at the same time so that both will be available to anyone who wishes to use them.

**Functions of Several Variables**

For problems 1 – 6 find the domain of the given function.

1. \( f(x, y) = \sqrt{2x + 4y - 1} \)

2. \( f(x, y) = \ln \left( \frac{1}{x - y} \right) \)

3. \( f(x, y) = \sqrt{\frac{1}{x^2} - \frac{1}{y^2}} \)

4. \( f(x, y, z) = \frac{1}{x + 1} + \frac{1}{y - 1} + \frac{1}{x + y - z} \)

5. \( f(x, y, z) = \ln \left( x^2 + y^2 - 8z \right) \)

6. \( f(x, y) = \sqrt{x + y} - \sqrt{x - 3} \)

For problems 7 – 11 identify and sketch the level curves (or contours) for the given function.

7. \( x^2 - 4z - y = 2 \)

8. \( x - 4z - y^2 = 2 \)

9. \( z^2 + 4x^2 = 1 - 4y^2 \)

10. \( z + 4x^2 = 1 - 4y^2 \)

11. \( 2x - 6y + z = -2 \)
For problems 12 – 14 identify and sketch the traces for the given curves.

12. \( x^2 - 4z - y = 2 \)

13. \( z^2 + 4x^2 = 1 - 4y^2 \)

14. \( 2x - 6y + z = -2 \)