Math 4362 Homework #1

1. 1.1 a,d
2. 1.5 a
3. 1.6. Hint: Let $u(x,y) = f(r(x,y))$ where $r^2 = x^2 + y^2$. Use the Chain Rule to show that $\triangle u(x,y) = f''(r(x,y)) + \frac{1}{r(x,y)} f'(r(x,y))$. Then solve an ODE for f.
4. 1.9
5. 1.10c
6. 1.17 a,b,c
7. 1.20
8. 1.28 a,c (You may need to look up your Math 2420 materials to recall how to solve these.)