**Problem 1:** Explain the conditions for which P9 is maximal

P9 is maximal when the load resistor R9 is equal to the Thevenin equivalent resistance, Rth.

**Problem 2:** Perform an analysis and show that the P9 plot is maximal at the conditions identified in Problem 1

Matlab calculated the ideal Rth to be 529.5334 Ohms. Figure 6 shows that the maximum power P9 occurs when R9 is 531 Ohms. R9 roughly equals Rth at this with some error.

**Problem 3:** Explain how R9\_best is selected

R9\_best is chosen with the constraint that the ratio P9/P10 falls between 0.7 and 1.3 on the Y-axis from Figure 10. R9\_best is chosen to be the largest value on the X-axis allowed by this range, in this case 1421 Ohms. The chosen resistance will correspond with the highest efficiency eta available as shown by Figure 11, in this case eta=0.66.

**Problem 4:** Perform an analysis and show that the P9\_meas plot is maximal at the conditions identified in Problem 1

Rth\_meas was taken to be 522 Ohms. Matlab found that the maximum P9\_meas occurs at R9=500 Ohms. This R9 value is the closest available to Rth\_meas. The explanation from Problem 1 still holds, and the seeming discrepancy is caused by the resolution of the chosen values for the decade box.

**Problem 4:** Explain how R9\_best\_measured is selected

R9\_best\_measured is chosen with the constraint that the ratio Measured P9/P10 falls between 0.7and 1.3 on the Y-axis from Figure 16. R9\_best\_measured is chosen to be the largest value on the X-axis allowed by this range, in this case 1400 Ohms. The chosen resistance will correspond with the highest efficiency eta available as shown by Figure 17, in this case eta=0.636