HW4
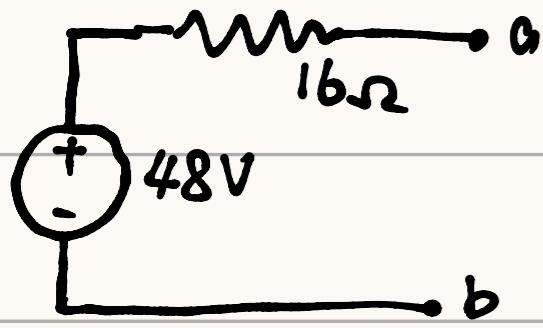
1. $U_{th} = U \times \dfrac{R_1}{R_1 + R_2}$

   $= 60 \times \dfrac{40}{40 + 10}$

   $= 48V$

   $R_{1,2} = \dfrac{1}{\frac{1}{40} + \frac{1}{8}} = \dfrac{20}{3}$

   $U_{12} = U \times \dfrac{\frac{20}{3}}{10 + \frac{20}{3}} = 24V$

   $I = \dfrac{U}{R} = \dfrac{24V}{8\Omega} = 3A$

   $R_{th} = \dfrac{U_{th}}{I} = \dfrac{48V}{3A} = 16\Omega$

2. (a) $I = \dfrac{U}{R} = \dfrac{45V}{6 + R_0}$

   $P = I^2 \cdot R = \dfrac{6 \times 45^2}{(6 + R_0)^2} =$

   when $R_0 = 0$ $P_{max} = 337.5W$

   (b) $P_{max} = 337.5W$