Homework 17.

9.1 $x = \sqrt{(\sqrt{u^2+v^2}+u)/2}$, $y = \sqrt{(\sqrt{u^2+v^2}-u)/2}$

9.2 $u = y/2$, $v = -(x+1)/2$.

9.3 $u = x/(x^2+y^2)$, $v = -y/(x^2+y^2)$.

9.4 $u = e^x \cos(y)$, $v = e^x \sin(y)$.

9.5 $u = (x^2+y^2-1)/(x^2+(y+1)^2)$, $v = -2x/(x^2+(y+1)^2)$

10.4 $T = 200 \arctan(y/x)/\pi$. Isothermals are straight lines through the origin.

10.6 $T = 100y/(x^2+y^2)$. Isothermals $y/(x^2+y^2) =$ constant. Flow lines $x/(x^2+y^2) =$ constant.

10.11 The lines with u constant are the circles $(x+1)^2+y^2 = C((x-1)^2+y^2)$. The lines with v constant are the circles passing through $(1,0)$ and $(-1,0)$.

10.12 $T = (20/\pi)\arctan(2y/(1-x^2-y^2))$ where the arctangent is the value between $\pi/2$ and $3\pi/2$.