Problem 6

Problems 1 through 6 involve equations of the form $dy/dt = f(y)$. In each problem sketch the graph of $f(y)$ versus y, determine the critical (equilibrium) points, and classify each one as asymptotically stable or unstable. Draw the phase line, and sketch several graphs of solutions in the ty-plane.

$$dy/dt = -2(\arctan y)/(1 + y^2), \qquad -\infty < y_0 < \infty$$