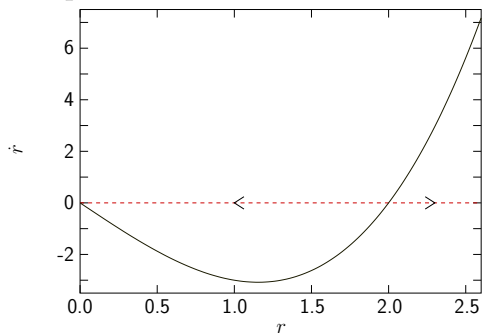# 7.1.1

Sketch the phase portrait for

$$\begin{cases} \dot{r} &= r^3 - 4r, \\ \dot{\theta} &= 1. \end{cases}$$

The equation and the flow for r looks like

Trajectories for $r_0 = 1.9$, 2.0, 2.001. The trajectory for $r_0 < 2$ is an inward spiral whereas trajectories for $r_0 > 2$ are moving outwards: