

**MATH 102:107, AUTONOMOUS DIFFERENTIAL EQUATIONS  
EXERCISE**

Qualitatively analyze the following differential equations. (Use the graph of  $dy/dt$  vs  $y$  to get you started.)

(1)  $\frac{dy}{dt} = -(y - 2)(y + 1)$

(4)  $\frac{dy}{dt} = y(y - 2)^2(y + 1)$

(2)  $\frac{dy}{dt} = (y - 2)^2$

(5)  $\frac{dy}{dt} = \sin y$

(3)  $\frac{dy}{dt} = y(y - 2)(y + 1)$

(6)  $\frac{dy}{dt} = y^2 + 5$

