

**MATH 102:102, 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)  $\frac{dy}{dt} = y^2 + 5$