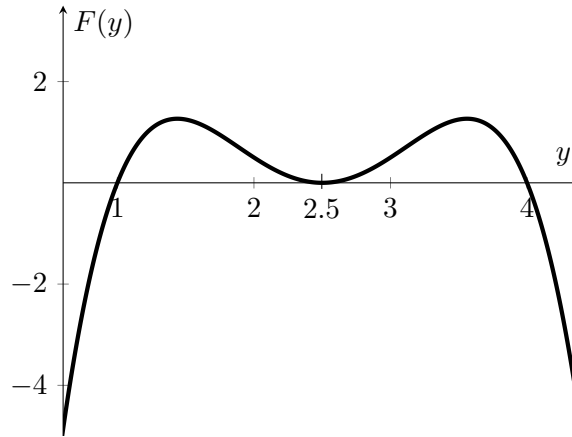**8.** [10 points] Consider the differential equation

$$\frac{dy}{dt} = F(y)$$

where $F(y)$ is graphed below.

a. [4 points] Identify all equilibrium solutions to the equation above.

b. [4 points] Determine the stability of each equilibrium solution of the differential equation.

c. [2 points] Suppose $y(t)$ solves the differential equation above subject to the initial condition $y(0) = 3$. Compute $\lim_{t\to\infty} y(t)$. Write your answer in the blank provided.

$$\lim_{t\to\infty} y(t) = \underline{\qquad\qquad}$$