First-Order Systems- HW Problems

Solve the following first order systems:

1.
$$\begin{aligned} x' &= 4y\\ y' &= -2x. \end{aligned}$$

$$\begin{array}{ll} 2. & x' = -8y \\ & y' = 4x \end{array}$$

3.
$$x' = -2y;$$
 $x(0) = 2$
 $y' = 2x;$ $y(0) = 1$

4.
$$x' = y;$$
 $x(0) = 1$
 $y' = 6x - y;$ $y(0) = -8$

5.
$$\begin{aligned} x' &= y\\ y' &= 6x + y \end{aligned}$$