Solve the differential equation.

1. \( \frac{dy}{dx} = -\frac{2x}{y} \)  
2. \( \frac{dy}{dx} = y^2 \sin x \)  
3. \( \frac{dy}{dx} = y(x + 2) \)

Find the solution that satisfies the given condition.

4. \( \frac{dy}{dx} = 2x^2y \) and \( y = 1 \) when \( x = 3 \)

5. The slope field of \( \frac{dy}{dx} = 2x^2y \) from question #4 is shown below. Draw the particular solution \( y = f(x) \) when \( f(3) = 1 \) that you found in question #4 on the slope field.
Find the solution that satisfies the given condition.

6. \( \frac{dy}{dx} = \frac{x+2}{y} \) and \( y = -2 \) when \( x = -3 \)

7. The slope field of \( \frac{dy}{dx} = \frac{x+2}{y} \) from question #6 is shown below. Draw the particular solution \( y = f(x) \) when \( f(-2) = -3 \) that you found in question #6 on the slope field.

ANSWERS TO CORRECTIVE ASSIGNMENT

1. \( y = \pm \sqrt{-2x^2 + c} \)

2. \( y = \frac{1}{\cos x + c} \)

3. \( y = e^{\frac{1}{2}x^2 + 2x + c} \)
   which turns into
   \( y = Ce^{\frac{1}{2}x^2}e^{2x} \)

4. \( y = e^{\frac{2}{3}x^3 - 18} \)
   which turns into
   \( y = \frac{1}{e^{18}}e^{\frac{2}{3}x^3} \)

5. 

6. \( y = -\sqrt{x^2 + 4x + 7} \)

7. 