a)

$$2y \cdot \frac{dy}{dx} = 3x^2 \qquad\qquad y' = \frac{dy}{dx}$$

$$\int 2y\, dy = \int 3x^2\, dx \qquad y^2 + A = x^3 + B \iff y^2 = x^3 + \underbrace{(B-A)}_{C}$$

$$y^2 = x^3 + C \qquad y = \pm\sqrt{x^3 + C} \qquad 2 = \sqrt{1 + C} \qquad C = 3$$

$$\boxed{Sv: \; y = \sqrt{x^3 + 3}}$$

b)

$$\int 3y^2\, dy = \int 2x\, dx$$

$$y^3 = x^2 + C \qquad y = (x^2 + C)^{1/3}$$

$$2 = (1 + C)^{1/3} \qquad C = 7$$

$$\boxed{Sv: \; y = \sqrt[3]{x^2 + 7}}$$

c)

$$\int y\, dy = \int 3x^2\, dx$$

$$\frac{y^2}{2} = x^3 + C \qquad y = \sqrt{2(x^3 + C)} \qquad 2 = \sqrt{2(1 + C)} \qquad C = 1$$

$$Sv: \; y = \sqrt{2(x^3 + 1)}$$

d)

$$\int y^2\, dy = \int 2x\, dx$$

$$\frac{y^3}{3} = x^2 + C \qquad y = \left(3(x^2 + C)\right)^{1/3} \qquad 2\left(3(1 + C)\right)^{1/3}$$

$$C = 5/3$$

$$\boxed{Sv: \; y = \sqrt[3]{3x^2 + 5}}$$