

الحل:

$$\frac{dy}{dx} = -\sqrt{\frac{1-y^2}{1-x^2}}$$

$$\Rightarrow \frac{1}{\sqrt{1-y^2}} dy = -\frac{1}{\sqrt{1-x^2}} dx$$

$$\Rightarrow \int \frac{1}{\sqrt{1-y^2}} dy = \int -\frac{1}{\sqrt{1-x^2}} dx$$

$$\sin^{-1} y = -\sin^{-1} x + c$$

$$(e) \quad y - x \frac{dy}{dx} = a \left[ y^2 + \frac{dy}{dx} \right]$$

$$y - x \frac{dy}{dx} = ay^2 + a \frac{dy}{dx}$$

$$\Rightarrow y - ay^2 = a \frac{dy}{dx} + x \frac{dy}{dx}$$

$$y - ay^2 = (a+x) \frac{dy}{dx}$$

$$\Rightarrow (y - ay^2) dx = (a+x) dy$$

$$\frac{1}{y - ay^2} dy = \frac{1}{a+x} dx$$

$$\int \frac{1}{y - ay^2} dy = \int \frac{1}{a+x} dx$$

$$= \frac{1}{y - ay^2} dx$$

$$= \frac{A}{y} + \frac{B}{1-ay}$$