2.2

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Solve the given differential equation by seperation of variables.

1

$$\frac{dy}{dx} = \sin 5x$$

5

$$(x+1)\frac{dy}{dx} = x + 6$$

9

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

13

$$\frac{dy}{dx} = e^{3x+2y}$$

17

$2y(x+1)dy = xdx$

21

$\frac{dS}{dr} = kS$

25

$\sec^2 x \quad dy + \csc y \quad dx = 0$

29

$(e^y + 1)^2 e^{-y} dx + (e^x + 1)^3 e^{-x} dy = 0$

33

$$\frac{dy}{dx} = \frac{xy + 3x - y - 3}{xy - 2x + 4y - 8}$$

37

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

41

$(e^{-y}+1)\sin x \quad dx = (1+\cos x)dy; \qquad y(0)=0$

45

$\dfrac{dx}{dy} = 4(x^2+1); \quad x\left(\dfrac{\pi}{4}\right) = 1$