Differential Equations-Separating the Variables Practice

1. $\frac{dy}{dx} = -4y$	8. $\frac{dy}{dx} = kx$	15. $\frac{dy}{dx} = \frac{1}{x} + \frac{y}{x}$
2. $\frac{dy}{dx} = -4y + 5$	9. $\frac{dy}{dx} = \sec^2 x$	16. $\frac{dP}{dt} = kP$
3. $\frac{dy}{dx} = -4y + 2x$	10. $\frac{dy}{dx} = 1 - 3x$	17. $\frac{dA}{dr} = 2\rho r$
4. $\frac{dy}{dx} = -4$	11. $\frac{dy}{dx} = 2x + 3y$	18. $\frac{dP}{dt} = kP(L - P)$
5. $\frac{dy}{dx} = 2x^3y^2$	12. $\frac{dy}{dx} = \frac{x}{y}$	19. $\frac{dT}{dt} = kT - 72k$
6. $\frac{dy}{dx} = 2x^3 + y^2$	13. $\frac{dy}{dx} = x - xy^2$	20. $\frac{dy}{dx} = e^{x+2y}$
7. $\frac{dy}{dx} = y \times \sec x \times \tan x$	14. $\frac{dx}{dy} = (2y + 1)(x - 3)$	21. $\frac{dx}{dy} = e^{y-3x}$

Differential Equations-Separating the Variables Practice-*SOLUTIONS*

1. $\frac{dy}{dx} = -4y$ $\int \frac{1}{y}\,dy = \int -4\,dx$	8. $\frac{dy}{dx} = kx$ $\int dy = \int kx\,dx$	15. $\frac{dy}{dx} = \frac{1}{x} + \frac{y}{x}$ $\int \frac{1}{1+y}\,dy = \int \frac{1}{x}\,dx$
2. $\frac{dy}{dx} = -4y + 5$ $\int \frac{1}{(-4y+5)}\,dy = \int dx$	9. $\frac{dy}{dx} = \sec^2 x$ $\int dy = \int \sec^2 x\,dx$	16. $\frac{dP}{dt} = kP$ $\int \frac{1}{P}\,dP = \int k\,dt$
3. $\frac{dy}{dx} = -4y + 2x$ Non-separable	10. $\frac{dy}{dx} = 1 - 3x$ $\int dy = \int (1 - 3x)\,dx$	17. $\frac{dA}{dr} = 2\pi r$ $\int dA = \int 2\pi r\,dr$
4. $\frac{dy}{dx} = -4$ $\int dy = \int -4\,dx$	11. $\frac{dy}{dx} = 2x + 3y$ Non-separable	18. $\frac{dP}{dt} = kP(L - P)$ $\int \frac{1}{P(L-P)}\,dP = \int k\,dt$
5. $\frac{dy}{dx} = 2x^3y^2$ $\int \frac{1}{y^2}\,dy = \int 2x^3\,dx$	12. $\frac{dy}{dx} = \frac{x}{y}$ $\int y\,dy = \int x\,dx$	19. $\frac{dT}{dt} = kT - 72k$ $\int \frac{1}{T-72}\,dT = \int k\,dt$
6. $\frac{dy}{dx} = 2x^3 + y^2$ Non-separable	13. $\frac{dy}{dx} = x + xy^2$ $\int \frac{1}{1+y^2}\,dy = \int x\,dx$	20. $\frac{dy}{dx} = e^{x+2y}$ $\int e^{-2y}\,dy = \int e^x\,dx$
7. $\frac{dy}{dx} = y \times \sec x \times \tan x$ $\int \frac{1}{y}\,dy = \int \sec x \times \tan x\,dx$	14. $\frac{dx}{dy} = (2y+1)(x-3)$ $\int \frac{1}{x-3}\,dx = \int (2y+1)\,dy$	21. $\frac{dx}{dy} = e^{y-3x}$ $\int e^{3x}\,dx = \int e^y\,dy$