



MATHEMATICS
CH: 9 - DIFFERENTIAL EQUATIONS - WORKSHEET

Name: _____

Date: _____

Class: XII Sec: A

1) Find the Integrating Factor:

a) $(e^{2\sqrt{x}}/\sqrt{x}) - (y/\sqrt{x})(dy/dx) = 1$ (1)

b) $(1 + y^2) + (2xy - \cot y)(dy/dx) = 0$ (1)

2) Find the general solution:

a) $(x^2 + 1)(dy/dx) + 2xy = \sqrt{x^2 + 1}$ (3)

b) $(y - \sin^2 x)dx + \tan x dy = 0$ (3)

c) $x(dy/dx) = y - x \sin(y/x)$ (2)

d) $(dy/dx) = y/x + \sqrt{x^2 + y^2}/x$ (3)

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

f) $x dy - y dx = \sqrt{x^2 + y^2} dx$ (3)

g) $x(dy/dx) = y (\log y - \log x + 1)$ (3)

h) $(dy/dx) - 3y \cot x = \sin 2x$ (3)

3) Find the particular solution:

a) $(dy/dx) + y \cot x = 2/(1 + \sin x)$, given $y = 0, x = \pi/4$. (3)

b) $x \sin(y/x)(dy/dx) + x - y \sin(y/x) = 0$, given $x = 1, y = \pi/2$. [3 - HOT] (2)

c) $x e^{y/x} \sin(y/x) + x (dy/dx) \sin(y/x) = 0$, given $x = 1, y = 0$. (3)

d) $[x \sin^2(y/x) - y] dx + x dy = 0$, given $y = \pi/4, x = 1$. (3)

4) Find the degree and order:

a) $[(d^2y/dx^2) + x]^3 = -dy/dx$. (1)

b) $(d^3y/dx^3) + 4[(dy/dx)^3 + 5]^{1/2} = 0$. (1)



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c) $(\frac{d^2y}{dx^2})x + \cos(\frac{dy}{dx}) = y^2$. (1)

d) $\frac{d}{dx}[(\frac{dy}{dx})^3] = 1$. (1)

e) $[1 + (\frac{dy}{dx})^2]^{3/2} = \frac{d^2y}{dx^2}$. (1)