

$$1. y(4 + e^x) dy - e^x dx = 0$$

$$2. xy' = \frac{3y^3 + 6yx^2}{2y^2 + 3x^2}$$

$$3. y' = \frac{x + 2y - 3}{4x - y - 3}$$

$$4. y' + \frac{2x}{1+x^2} y = \frac{2x^2}{1+x^2}, y(0) = \frac{2}{3}$$

$$5. 3y' + 2xy = 2xy^{-2} e^{-2x^2}, y(0) =$$

$$6. y''' \operatorname{cth} 2x = 2y''$$

$$7. y'' = 72y^3; y(2) = 1; y'(2) = 6$$

$$8. y^{IV} + 2y''' + y'' = 4x^2$$

$$9. y''' - 3y' - 2y = -4xe^x$$

$$10. y'' + y = 2\cos 3x - 3\sin 3x$$