



## 5. Nonlinear Integral Equations with Variable Limit of Integration

1.  $\int_0^x y(t)y(x-t) dt = (Ax + B)e^{\lambda x}.$
2.  $\int_0^x y(t)y(x-t) dt = A^2 x^\mu e^{\lambda x}.$
3.  $\int_0^x y(t)y(x-t) dt = A^2 \cos(\lambda x).$
4.  $\int_0^x y(t)y(x-t) dt = A \sin(\lambda x).$
5.  $\int_0^x f\left(\frac{t}{x}\right)y(t)y(x-t) dt = Ax^\mu e^{\lambda x}.$
6.  $y(x) + A \int_a^x y^2(t) dt = Bx + C.$
7.  $y(x) + \int_a^x f(t)y^k(t) dt = A.$
8.  $y(x) + \int_0^x \frac{f(y(t))}{ax + bt} dt = A.$
9.  $y(x) + \int_a^x f(t, y(t)) dt = g(x).$
10.  $y(x) + \int_a^x (x-t)^n f(t, y(t)) dt = g(x), \quad n = 1, 2, \dots$
11.  $y(x) + \int_a^x e^{\lambda(x-t)} f(t, y(t)) dt = g(x).$
12.  $y(x) + \int_a^x \sin[\lambda(x-t)] f(t, y(t)) dt = g(x).$

The EqWorld website presents extensive information on solutions to various classes of ordinary differential equations, partial differential equations, integral equations, functional equations, and other mathematical equations.