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. $\int_0^x y(t)y(x-t)\,dt = A^2x^\mu e^{\lambda x}.$

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. $y(x) + \int_0^x \frac{f\big(y(t)\big)}{ax+bt}\,dt = A.$

9. $y(x) + \int_a^x f\big(t, y(t)\big)\,dt = g(x).$

10. $y(x) + \int_a^x (x-t)^n f\big(t, y(t)\big)\,dt = g(x), \qquad n = 1, 2, \ldots.$

11. $y(x) + \int_a^x e^{\lambda(x-t)} f\big(t, y(t)\big)\,dt = g(x).$

12. $y(x) + \int_a^x \sin[\lambda(x-t)] f\big(t, y(t)\big)\,dt = g(x).$

