

1. $x = y' \sqrt{y'^2 + 1}$;
2. $x(y^2 - 1) = 2y'$;
3. $y' = e^{xy'/y}$;
4. $y'(x - \ln y') = 1$;
5. $y = \ln(1 + y'^2)$;
6. $y = (y'^2 - 1)e^{y'}$;
7. $y'^2 - y'^3 = y^2$;
8. $2xy' - y = y' \ln yy'$;
9. $y = xy' - x^2 y'^3$;
10. $x^2 y'^2 = xyy' + 1$;
11. $x = y' \sin y'$;
12. $y' = 10 \sin y'$;
13. $y = 2xy' - 4y'^3$;
14. $2y'^2(y - xy') = 1$;
15. $2xy' - y = \ln y'$;
16. $y'' - 2y' - 3y = e^{4x}$;
17. $y'' - y = 2e^x - x^2$;
18. $y'' - 3y' + 2y = \sin x$;
19. $y'' + y = 4xe^x$;
20. $y'' - 3y' + 2y = x \cos x$;
21. $y'' - 4y' + 8y = e^{2x} + \sin 2x$;
22. $y'' - 9y = e^{3x} \cos x$;
23. $y'' + 3y' - 4y = e^{-4x} + xe^{-x}$;
24. $y'' + y = x \sin x$;
25. $y'' - 2y' + y = 6xe^x$;
26. $y'' - 2y' + y = \frac{e^x}{x}$;
27. $y'' + 3y' + 2y = \frac{1}{e^x + 1}$;
28. $y'' + y = \frac{1}{\sin x}$;
29. $y'' + 2y' + y = 3e^{-x} \sqrt{x + 1}$;
30. $x^3(y'' - y) = x^2 - 2$;
31. $y'' + y = 2 \sec^3 x$;
32. $y'' + 2y' + y = \cos ix$;
33. $y'' - \frac{2y}{x^2} = 3 \ln(-x)$;
34. $y'' + 2y' + y = xe^x + \frac{1}{xe^x}$;
35. $x^2 y'' - xy' + y = \frac{\ln x}{x} + \frac{x}{\ln x}$;
36. $(2x + 1)y'' + 4xy' - 4y = 0$;
37. $x^2(x + 1)y'' - 2y = 0, \quad y_1 = 1 + \frac{1}{x}$;
38. $xy'' + 2y' - xy = 0, \quad y_1 = \frac{e^x}{x}$;
39. $y'' - 2(1 + \tan^2 x)y = 0, \quad y_1 = \tan x$;
40. $(e^x + 1)y'' - 2y' - e^x y = 0, \quad y_1 = e^x - 1$;
41. $x^2 y'' \ln x - xy' + y = 0$;
42. $y'' - y' \tan x + 2y = 0, \quad y_1 = \sin x$;
43. $xy'' - (x + 1)y' - 2(x - 1)y = 0$;
44. $y'' + 4xy' + (4x^2 + 2)y = 0$;
45. $y''(x^2 + 1) - 2y = 0$;
46. $x(x + 1)y'' + (x + 2)y' - y = x + \frac{1}{x}$;
47. $(2x + 1)y'' + (2x - 1)y' - 2y = x^2 + x$;
48. $(x^2 - 1)y'' + 4xy' + 2y = 6x,$
 $y_1 = x, \quad y_2 = \frac{x^2 + x + 1}{x + 1}$;
49. $(3x^3 + x)y'' + 2y' - 6xy = 4 - 12x^2,$
 $y_1 = 2x, \quad y_2 = (x + 1)^2$;
50. $xy'' + 2y' + xy = 0, \quad y_1 = \frac{\sin x}{x}$;
51. $yy''' + 3y'y'' = 0$;
52. $yy'' = y'(y' + 1)$;
53. $y'y''' = 2y''^2$;
54. $yy'' + y'^2 = 1$;
55. $xy'' = 2yy' - y'$.