Assignment - Ordinary Differential equation

Solve the following differential equation.

1. $(y-x^3)\,dx + (x+y^3)\,dy = 0$

2. $(y^2 e^{xy^2} + 4x^3)\,dx + (2xy e^{xy^2} - 3y^2)\,dy = 0$

3. $(\sin x \cdot \tan y + 1)\,dx + \cos x \cdot \sec^2 y\,dy = 0$

4. $(x^2 + y^2 - a^2)\,x\,dx + (x^2 - y^2 - b^2)\,y\,dy = 0$

5. $y' = \dfrac{y-2x}{2y-x}$; $y(1) = 2$

6. $3x^2 y\,dx + (y^4 - x^3)\,dy = 0$

7. $x\,dy = (x^5 + x^3 y^2 + y)\,dx$

8. $(y^3 x^3 + 1)\,dx + x^4 y^2\,dy = 0$

9. $2xy\,dy - (x^2 + y^2 + 1)\,dx = 0$

10. $(3xy - 2ay^2)\,dx + (x^2 - 2axy)\,dy = 0$

11. $y^2\,dx + (x^2 - xy - y^2)\,dy = 0$

12. $(y-x)\,dx + (y+x)\,dy = 0$

13. $(xy^3 + y)\,dx + 2(x^2 y^2 + x + y^4)\,dy = 0$

14. $y(x+y+1)\,dx + x(x+3y+2)\,dy = 0$

15. $y(xy + 2x^2y^2)\,dx + x(xy - x^2y^2)\,dy = 0$

16. $y(1+xy)\,dx + (1-xy)x\,dy = 0$

17. $(8y\,dx + 8x\,dy) + x^2y^3(4y\,dx + 5x\,dy) = 0$

18. $x^3y^3(2y\,dx + x\,dy) - (5y\,dx + 7x\,dy) = 0$