

1

**Solution.**

$$\Rightarrow (p-1)^2 x = (p - \ln p) + c$$

$$\Rightarrow \begin{cases} x(p) = \frac{p - \ln p + c}{(p-1)^2} \\ y(p) = xp^2 + 1 - p \end{cases}$$

2

**0.1. EXERCISES(6.2).**

11. Find the GS of the following SDE:

$$\text{a) } 2y \, dy + 4x^2 \sqrt{4-y^2} \, dx = 0, \quad \text{b) } \frac{\ln y}{\ln x} \, dy - \frac{x^4}{y^2} \, dx = 0$$

12. Same question for:

$$\text{a) } x^3 \, dy - x^3 \, dx = dx, \quad \text{b) } (1+y^2) \, dx + x(x+1) \, dy = 0$$

13. Same question for:

$$\text{a) } 3x^2 - 2y^3 y' = 0, \quad \text{b) } \sin \theta \, dr + r \cos \theta \, d\theta = 0$$

14. Solve

$$\text{a) } \frac{dy}{dx} = \cos(x-y) \quad \text{b) } \frac{dx}{dt} = e^{x/t} + \frac{x}{t}$$

15. Find the PS under the given condition:

$$\text{a) } dr = r \tan \theta \, d\theta; r = 1 \text{ when } \theta = 0, \\ \text{b) } e^x \sec y \, dx + (1 + e^x) \sec y \tan y \, dy = 0, y(3) = \pi/3$$

16. Find the GS of the following HDE:

$$\text{a) } \left( \frac{1}{x} - \frac{y}{x^2} e^{y/x} \right) dx + \left( \frac{1}{x} - \frac{1}{y} \right) dy = 0 \\ \text{b) } (x\sqrt{x+y^2} - y^2) \, dx + xy \, dy = c$$

17. Solve a)  $\frac{dy}{dx} = \frac{y-x}{y+x}$  b)  $x(\ln x - \ln y) \, dy - y \, dx = 0$

18. Find the GS of the following HDE:

$$\text{a) } 2y \, dx - (x^2 - y^2) \, dy = 0 \quad \text{b) } y \, dx = x \, dy - \sqrt{x^2 + y^2} \, dx$$

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<sup>1</sup>This solution begins on the page before.

<sup>2</sup>We talked about this issue in mail. This is not regular use of exercise environment, so I used classic subsection.