

### Exact Differential Equations

2.20  $(3x^2 + 6xy^2) dx + (6x^2y + 4y^3) dy = 0$     **ANS**  $x^3 + 3x^2y^2 + y^4 = C$

2.21  $(2x^3 - xy^2 - 2y + 3) dx - (x^2y + 2x) dy = 0$

**ANS**  $x^4 - x^2y^2 - 4xy + 6x = C$

2.22  $(xy^2 + x - 2y + 3) dx + x^2y dy = 2(x + y) dy$

**ANS**  $x^2y^2 + x^2 + 6x - 4xy - 2y^2 = C$

2.23  $3y(x^2 - 1) dx + (x^3 + 8y - 3x) dy = 0$ ,    when  $x = 0$ ,  $y = 1$

**ANS**  $x^3y - 3xy + 4y^2 = 4$

2.24  $(x^2 + \ln y) dx + \frac{x}{y} dy = 0$     **ANS**  $\frac{1}{3}x^3 + x \ln y = C$

2.25  $2x(3x + y - ye^{-x^2}) dx + (x^2 + 3y^2 + e^{-x^2}) dy = 0$

**ANS**  $2x^3 + x^2y + ye^{-x^2} + y^3 = C$

2.26  $(3 + y + 2y^2 \sin^2 x) dx + (x + 2xy - y \sin 2x) dy = 0$

**ANS**  $3x + xy + xy^2 - \frac{1}{2}y^2 \sin 2x = C$

2.27  $(2xy + y^2) dx + (x^2 + 2xy + y^2) dy = 0$     **ANS**  $x^2y + xy^2 + \frac{1}{3}y^3 = C$