```
> restart
>
```

$$(2y^2+3xy+4x^2y^5)+(2xy+x^2+5x^3y^4)\frac{dy}{dx}=0$$

```
> Ecuacion := 2·y(x)··2 + 3·x·y(x) + 4·x··2·y(x)··5 + (2·x·y(x) + x··2 + 5·x··3·y(x)··4)
      ·diff(y(x), x) = 0
```

$$Ecuacion := 2\,y(x)^2 + 3\,x\,y(x) + 4\,x^2\,y(x)^5 + \left(2\,x\,y(x) + x^2 + 5\,x^3\,y(x)^4\right)\left(\frac{d}{dx}\,y(x)\right) = 0 \quad (1)$$

```
> with(DEtools) :
> FactorIntegrante := intfactor(Ecuacion)
```

$$FactorIntegrante := x \quad (2)$$

```
> M(x, y) := 2·y··2 + 3·x·y + 4·x··2·y··5
```

$$M(x,y) := 2\,y^2 + 3\,x\,y + 4\,x^2\,y^5 \quad (3)$$

```
> N(x, y) := 2·x·y + x··2 + 5·x··3·y··4
```

$$N(x,y) := 2\,x\,y + x^2 + 5\,x^3\,y^4 \quad (4)$$

```
> comprobacion[1] := simplify(diff(M(x, y), y) - diff(N(x, y), x)) = 0
```

$$comprobacion_1 := 2\,y + x + 5\,x^2\,y^4 = 0 \quad (5)$$

```
> MM(x, y) := FactorIntegrante·M(x, y); NN(x, y) := FactorIntegrante·N(x, y);
```

$$MM(x,y) := x\left(2\,y^2 + 3\,x\,y + 4\,x^2\,y^5\right)$$

$$NN(x,y) := x\left(2\,x\,y + x^2 + 5\,x^3\,y^4\right) \quad (6)$$

```
> comprobacion[2] := simplify(diff(MM(x, y), y) - diff(NN(x, y), x)) = 0
```

$$comprobacion_2 := 0 = 0 \quad (7)$$

```
> IntMMx := int(MM(x, y), x)
```

$$IntMMx := y^5\,x^4 + y\,x^3 + y^2\,x^2 \quad (8)$$

```
> SolucionGeneral := expand( IntMMx + int( (NN(x, y) - diff(IntMMx, y)), y) ) = C1
```

$$SolucionGeneral := y^5\,x^4 + y\,x^3 + y^2\,x^2 = C1 \quad (9)$$

```
> restart
> Ecuacion := 2·x·y(x)··2 - 3·y(x)··3 + (7 - 3·x·y(x)··2)·diff(y(x), x) = 0
```

$$Ecuacion := 2\,x\,y(x)^2 - 3\,y(x)^3 + \left(7 - 3\,x\,y(x)^2\right)\left(\frac{d}{dx}\,y(x)\right) = 0 \quad (10)$$

```
> with(DEtools) :
> intfactor(Ecuacion)
```

$$\frac{1}{y(x)^2} \quad (11)$$

```
> FactInt := 1/y^2;
```

$$FactInt := \frac{1}{y^2} \quad (12)$$

```
> M(x, y) := 2·x·y··2 - 3·y··3
```

$$M(x,y) := 2\,x\,y^2 - 3\,y^3 \quad \textbf{(13)}$$

> $N(x,y) := 7 - 3\cdot x\cdot y\cdot\cdot 2$

$$N(x,y) := 7 - 3\,x\,y^2 \quad \textbf{(14)}$$

> $comp_1 := simplify(diff(M(x,y),y) - diff(N(x,y),x)) = 0$

$$comp_1 := 4\,x\,y - 6\,y^2 = 0 \quad \textbf{(15)}$$

> $MM(x,y) := expand(FactInt\cdot M(x,y)); NN(x,y) := expand(FactInt\cdot N(x,y))$

$$MM(x,y) := 2\,x - 3\,y$$

$$NN(x,y) := \frac{7}{y^2} - 3\,x \quad \textbf{(16)}$$

> $comp_2 := simplify(diff(MM(x,y),y) - diff(NN(x,y),x)) = 0$

$$comp_2 := 0 = 0 \quad \textbf{(17)}$$

> $IntNNy := int(NN(x,y),y)$

$$IntNNy := -\frac{7}{y} - 3\,x\,y \quad \textbf{(18)}$$

> $Solucion := IntNNy + int((MM(x,y) - diff(IntNNy,x)),x) = C1$

$$Solucion := -\frac{7}{y} - 3\,x\,y + x^2 = C1 \quad \textbf{(19)}$$

>

>

>