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> restart
> EDOL := diff(y(x), x) - 2·x·y(x) = 2·x·exp(x·2)
      EDOL :=  $\frac{d}{dx} y(x) - 2 x y(x) = 2 x e^{x^2}$  (1)
> EDOH := lhs(EDOL) = 0
      EDOH :=  $\frac{d}{dx} y(x) - 2 x y(x) = 0$  (2)
> M(x, y) := -2·x·y
      M(x, y) := -2 x y (3)
> N(x, y) := 1
      N(x, y) := 1 (4)
> diff(M(x, y), y) = diff(N(x, y), x)
      -2 x = 0 (5)
ho no es exacta
> EDOFI :=  $\frac{\text{diff}(\mu(x), x)}{\mu(x)} = \left( \frac{\text{diff}(M(x, y), y) - \text{diff}(N(x, y), x)}{N(x, y)} \right)$ 
      EDOFI :=  $\frac{\frac{d}{dx} \mu(x)}{\mu(x)} = -2 x$  (6)
> FI := isolate(int(1/mu, mu) = int(rhs(EDOFI), x), mu)
      FI :=  $\mu = \frac{1}{e^{x^2}}$  (7)
> EDOLexacta := rhs(FI)·lhs(EDOL) = 0
      EDOLexacta :=  $\frac{\frac{d}{dx} y(x) - 2 x y(x)}{e^{x^2}} = 0$  (8)
> SGExacta := dsolve(EDOLexacta)
      SGExacta := y(x) = _C1 e^{x^2} (9)
> EDOLfinal := rhs(FI)·lhs(EDOL) = rhs(FI)·rhs(EDOL)
      EDOLfinal :=  $\frac{\frac{d}{dx} y(x) - 2 x y(x)}{e^{x^2}} = 2 x$  (10)
> SGfinal := expand(dsolve(EDOLfinal))
      SGfinal := y(x) = e^{x^2} x^2 + _C1 e^{x^2} (11)
> SGoriginal := dsolve(EDOL)
      SGoriginal := y(x) = (x^2 + _C1) e^{x^2} (12)
> with(DEtools) :
> intfactor(EDO)

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$\int_{-\infty}^{\infty}$

$$e^{-x^2}$$

(13)