```
> restart
> Ecuacion := y(x) + sqrt(y(x)··2 − x··2) − x·diff (y(x), x) = 0
```

$$Ecuacion := y(x) + \sqrt{y(x)^2 - x^2} - x\left(\frac{d}{dx}\, y(x)\right) = 0 \qquad (1)$$

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

$$[[\_homogeneous,\ class\ A],\ \_rational,\ \_dAlembert] \qquad (2)$$

```
> EcuacionDos := simplify(isolate(eval(subs(y(x) = v(x)·x, Ecuacion)), diff (v(x), x)))
```

$$EcuacionDos := \frac{d}{dx}\, v(x) = \frac{\sqrt{x^2\left(v(x)^2 - 1\right)}}{x^2} \qquad (3)$$

```
> EcuacionTres := lhs(EcuacionDos) = \frac{\sqrt{(v(x)^2 - 1)}}{x}
```

$$EcuacionTres := \frac{d}{dx}\, v(x) = \frac{\sqrt{v(x)^2 - 1}}{x} \qquad (4)$$

```
> odeadvisor(EcuacionTres)
```

$$[\_separable] \qquad (5)$$

```
> SolucionIntermedia := isolate( int( \frac{1}{sqrt(v··2 − 1)}, v) = int( \frac{1}{x}, x) + log(C_1), x)
```

$$SolucionIntermedia := x = \frac{v + \sqrt{v^2 - 1}}{C_1} \qquad (6)$$

```
> SolucionFinal := subs( v = \frac{y}{x}, SolucionIntermedia)
```

$$SolucionFinal := x = \frac{\dfrac{y}{x} + \sqrt{\dfrac{y^2}{x^2} - 1}}{C_1} \qquad (7)$$

```
> Ecuacion
```

$$y(x) + \sqrt{y(x)^2 - x^2} - x\left(\frac{d}{dx}\, y(x)\right) = 0 \qquad (8)$$

```
> FI := intfactor(Ecuacion) : FI_1
```

$$\frac{1}{\sqrt{(y(x) - x)(y(x) + x)}\, x} \qquad (9)$$

```
> Ecuacion
```

$$y(x) + \sqrt{y(x)^2 - x^2} - x\left(\frac{d}{dx}\, y(x)\right) = 0 \qquad (10)$$

```
> EcuacionExacta := lhs(Ecuacion)·FI_1 = 0
```

$$EcuacionExacta := \frac{y(x) + \sqrt{y(x)^2 - x^2} - x\left(\dfrac{d}{dx}\, y(x)\right)}{\sqrt{(y(x) - x)(y(x) + x)}\, x} = 0 \qquad (11)$$

```
> odeadvisor(EcuacionExacta)
```

$$[[\_homogeneous,\ class\ A],\ \_exact,\ \_rational,\ \_dAlembert] \qquad (12)$$

L>