> *restart*

> $EcuaDif := x \cdot diff(y(x), x) = \text{sqrt}(x^{..}2 - y(x)^{..}2) + y(x)$

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

> $SG := dsolve(EcuaDif)$

$$SG := -\arctan\left(\frac{y(x)}{\sqrt{x^2 - y(x)^2}}\right) + \ln(x) - \_C1 = 0 \tag{2}$$

> $EcuaSus := simplify(isolate(expand(subs(y(x) = x \cdot u(x), EcuaDif)), diff(u(x), x)))$

$$EcuaSus := \frac{d}{dx}\, u(x) = \frac{\sqrt{-x^2\left(-1 + u(x)^2\right)}}{x^2} \tag{3}$$

> $EcuaSus := diff(u(x), x) = \dfrac{\text{sqrt}(1 - u(x)^{..}2)}{x}$

$$EcuaSus := \frac{d}{dx}\, u(x) = \frac{\sqrt{1 - u(x)^2}}{x} \tag{4}$$

> $SGS := int\left(\dfrac{1}{\text{sqrt}(1 - u^{..}2)}, u\right) = int\left(\dfrac{1}{x}, x\right) + C$

$$SGS := \arcsin(u) = \ln(x) + C \tag{5}$$

> $SGFinal := isolate\left(subs\left(u = \dfrac{y(x)}{x}, SGS\right), y(x)\right)$

$$SGFinal := y(x) = \sin(\ln(x) + C)\, x \tag{6}$$

> *restart*

> $ED := (2\, x \cdot y(x)^{..}2 - 3 \cdot y(x)^{..}3) + (7 - 3 \cdot x \cdot y(x)^{..}2) \cdot diff(y(x), x) = 0$

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

> $with(DEtools):$

> $intfactor(ED)$

$$\frac{1}{y(x)^2} \tag{8}$$

>