

```
% Solve equation
% log(cos(y))dx+x*tan(y)dy=0
% dx/x+tan(y)*dy/log(cos(y))=0

% 1)
syms x y;
eq1=int(1/x,x)+int(tan(y)/log(cos(y)),y)
```

$$eq1 = \log(x) - \log(\log(\cos(y)))$$

```
% log(log(cos(y))) = log(x) + log(C)
% log(cos(y))=C*x
% y=acos(exp(C*x))

% 2)
% log(cos(y))dx+x*tan(y)dy=0
% dy/dx = -log(cos(y))/(x*tan(y))
syms x y(x);
eqn = diff(y(x)) == -log(cos(y))/(x*tan(y))
```

$$eqn(x) =$$

$$\frac{\partial}{\partial x} y(x) = -\frac{\log(\cos(y(x)))}{x \tan(y(x))}$$

```
ySol(x) = dsolve(eqn)
```

$$ySol(x) =$$

$$\left\{ \begin{array}{l} \text{acos}\left(e^{xe^{-C_{13}}}\right) \quad \text{if } e^{xe^{-C_{13}}} \in [-1, 1] \end{array} \right.$$

```
% acos(exp(C5*x))
```

```
% Checking
syms C5;
ySol=acos(exp(C5*x))
```

$$ySol = \text{acos}\left(e^{C_5 x}\right)$$

```
eq5=diff(y,x)+log(cos(y))/(x*tan(y))
```

$$eq5(x) =$$

$$\frac{\partial}{\partial x} y(x) + \frac{\log(\cos(y(x)))}{x \tan(y(x))}$$

```
eq6=simplify(subs(eq5,y,ySol))
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$$eq6(x) =$$

$$\frac{e^{C_5 x} (\log(e^{C_5 x}) - C_5 x)}{x \sqrt{1 - e^{2 C_5 x}}}$$

% ?