DEtools[separablesol] - find solutions of a separable first order ODE

Calling Sequences

separablesol(**lode**, **v**)

Parameters

`lode` – first order differential equation

`v` – dependent variable of the lode

Description

- The **separablesol** routine determines whether the first argument is a separable first order ODE and, if so, returns a solution to the equation.
- The first argument is a differential equation in **diff** or **D** form and the second argument is the variable in the differential equation.
- This function is part of the DEtools package, and so it can be used in the form separablesol(..) only after executing the command with(DEtools). However, it can always be accessed through the long form of the command by using DEtools[separablesol](..).

Examples

```
> with(DEtools):
```

```
> ode := t^2*(z(t)+1) +z(t)^2*(t-1)*diff(z(t),t) = 0;
```

$$ode := t^2\,(z(t)+1) + z(t)^2\,(t-1)\left(\frac{d}{dt}\,z(t)\right) = 0 \tag{2.1}$$

```
> separablesol( ode, z(t) );
```

$$\left\{z(t) = e^{\mathrm{RootOf}\left(2\_Z + t^2 + 2t + 2\ln(t-1) + e^{2\_Z} - 4e^{\_Z} + 3 + 2\_C1\right)} - 1\right\} \tag{2.2}$$

```
> ode := t*(z(t)-3)*D(z)(t) +4*z(t) = 0;
```

$$ode := t\,(z(t)-3)\,D(z)(t) + 4\,z(t) = 0 \tag{2.3}$$

```
> separablesol( ode, z(t) );
```

$$\left\{z(t) = e^{-\mathrm{LambertW}\left(-\frac{1}{3}\,t^{4/3}\,e^{\frac{4}{3}\_C1}\right) + \frac{4}{3}\ln(t) + \frac{4}{3}\_C1}\right\} \tag{2.4}$$

See Also

DEtools, dsolve