# The `mdframed` package

Examples for `framemethod=TikZ`

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In this document I collect various examples for `framemethod=TikZ`. Some presented examples are more or less exorbitant.

## Contents

## 1 Loading

In the preamble only the package `mdframed` width the option `framemethod=TikZ` is loaded. All other modifications will be done by `\mdfdefinestyle` or `\mdfsetup`.

### Note
Every `\global` inside the examples is necessary to work with the package `showexpl`.

## 2 Examples

All examples have the following settings:

```
\mdfsetup{skipabove=\topskip,skipbelow=\topskip}
\newrobustcmd\ExampleText{%
An \textit{inhomogeneous linear} differential equation
has the form
\begin{align}
L[v ] = f,
\end{align}
where $L$ is a linear differential operator, $v$ is
the dependent variable, and $f$ is a given non−zero
function of the independent variables alone.
}
```

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{1}$$

where $L$ is a linear differential operator, $v$ is the dependent variable, and $f$ is a given non-zero function of the independent variables alone. round corner

```
\global\mdfdefinestyle{exampledefault}{%
      outerlinewidth=5pt,innerlinewidth=0pt,
      outerlinecolor=red,roundcorner=5pt
}
\begin{mdframed}[style=exampledefault]
\ExampleText
\end{mdframed}
```

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{2}$$

where $L$ is a linear differential operator, $v$ is the dependent variable, and $f$ is a given non-zero function of the independent variables alone.

## Example 1 – hidden line + frame title

```
\global\mdfapptodefinestyle{exampledefault}{%
 topline=false,leftline=false,}
\begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
\ExampleText
\end{mdframed}
```
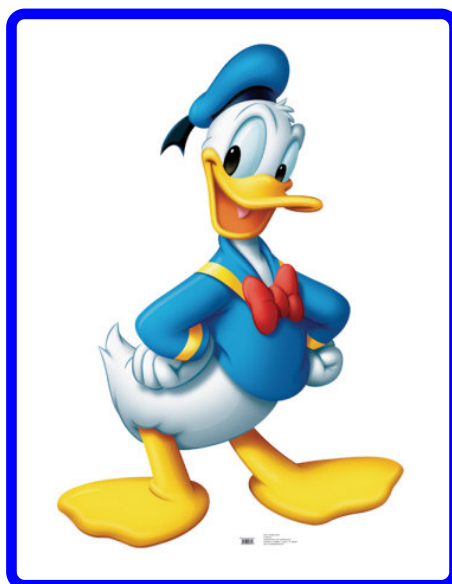
**Inhomogeneous linear**

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{3}$$

where $L$ is a linear differential operator, $v$ is the dependent variable, and $f$ is a given non-zero function of the independent variables alone.

*Example 2 – framed picture which is centered*                          *2 Examples*

## Example 2 – framed picture which is centered

```
\begin{mdframed}[userdefinedwidth=6cm,align=center,
                    linecolor=blue,middlelinewidth=4pt,roundcorner=5pt]
\includegraphics[width=\linewidth]{donald-duck}
\end{mdframed}
```



## Example 3 – Gimmick

```
\mdfsetup{splitbottomskip=0.8cm,splittopskip=0cm,
            innerrightmargin=2cm,innertopmargin=1cm,%
            innerlinewidth=2pt,outerlinewidth=2pt,
            middlelinewidth=10pt,backgroundcolor=red,
            linecolor=blue,middlelinecolor=gray,
            tikzsetting={draw=yellow,line width=3pt,%
                         dashed,%
                         dash pattern= on 10pt off 3pt},
            rightline=false,bottomline=false}
\begin{mdframed}
\ExampleText
\end{mdframed}
```

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{4}$$

where $L$ is a linear differential operator, $v$ is the dependent variable, and $f$ is a given non-zero function of the independent variables alone.

## Example 4 – complex example with TikZ

```latex
\tikzstyle{titregris} =
      [draw=gray, thick, fill=white, shading = exersicetitle, %
        text=gray, rectangle, rounded corners, right,minimum height=.7cm]

\pgfdeclarehorizontalshading{exersicebackground}{100bp}
              {color(0bp)=(green!40); color(100bp)=(black!5)}

\pgfdeclarehorizontalshading{exersicetitle}{100bp}
              {color(0bp)=(red!40);color(100bp)=(black!5)}

\newcounter{exercise}
\renewcommand*\theexercise{Exercise~n\arabic{exercise}}
\makeatletter
\def\mdf@@exercisepoints{}%new mdframed key:
\define@key{mdf}{exercisepoints}{%
     \def\mdf@@exercisepoints{#1}
}
\makeatother

\mdfdefinestyle{exercisestyle}{%
   outerlinewidth=1pt,innerlinewidth=0pt,
   roundcorner=2pt,linecolor=gray,
   tikzsetting={shading = exersicebackground},
   innertopmargin=1.2\baselineskip,
   skipabove={\dimexpr0.5\baselineskip+\topskip\relax},
   needspace=3\baselineskip,
   frametitlefont=\sffamily\bfseries,
   settings={\global\stepcounter{exercise}},
   singleextra={%
           \node[titregris,xshift=1cm] at (P-|O) %
                 {~\mdf@frametitlefont{\theexercise}~};
         \ifdefempty{\mdf@@exercisepoints}%
         {}%
         {\node[titregris,left,xshift=-1cm] at (P)%
             {~\mdf@frametitlefont{\mdf@@exercisepoints points}~};}%
     },
   firstextra={%
           \node[titregris,xshift=1cm] at (P-|O) %
                 {~\mdf@frametitlefont{\theexercise}~};
         \ifdefempty{\mdf@@exercisepoints}%
         {}%
         {\node[titregris,left,xshift=-1cm] at (P)%
             {~\mdf@frametitlefont{\mdf@@exercisepoints points}~};}%
     },
}
\begin{mdframed}[style=exercisestyle,]
\ExampleText
\end{mdframed}

\begin{mdframed}[style=exercisestyle,exercisepoints=10]
\ExampleText
\end{mdframed}
```

*Example 5 – Theorem environments*                                    *2 Examples*

## Example 5 – Theorem environments

```
\mdfdefinestyle{theoremstyle}{%
    linecolor=red,linewidth=2pt,%
    frametitlerule=true,%
    apptotikzsetting={\tikzset{mdfframetitlebackground/.append style={%
                            shade,left color=white, right color=blue!20}}},
    frametitlerulecolor=green!60,
    frametitlerulewidth=1pt,
    innertopmargin=\topskip,
}
\mdtheorem[style=theoremstyle]{definition}{Definition}
\begin{definition}[Inhomogeneous linear]
\ExampleText
\end{definition}
\begin{definition*}[Inhomogeneous linear]
\ExampleText
\end{definition*}
```

---

**Definition 1: Inhomogeneous linear**

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{5}$$

where $L$ is a linear differential operator, $v$ is the dependent variable, and $f$ is a given non-zero function of the independent variables alone.

---

**Definition: Inhomogeneous linear**

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{6}$$

where $L$ is a linear differential operator, $v$ is the dependent variable, and $f$ is a given non-zero function of the independent variables alone.