



Sharif University of Technology
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Creating Commutative Diagrams in \LaTeX (by Tikz)

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Animated Integral

Relative

```
\usepackage{tikz}
\usetikzlibrary{matrix,arrows}
```

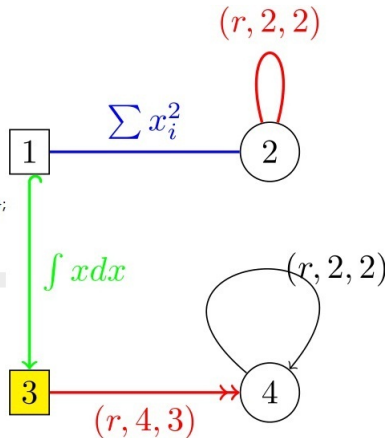
```
\begin{tikzpicture}
```

```
\node (A)[draw, ]{1};
\node (B)[draw,node distance=2.5 cm,right of=A,shape=circle] {$2$};
\node (C)[draw,node distance=2.5 cm,below of=A,shape=rectangle,fill=yellow] {$3$};
\node (D)[draw,node distance=2.5 cm, below of=B,shape=circle] {$4$};
```

```
\draw[-, blue, thick] (A) to node [auto]{$\sum x_i^2$} (B);
\draw[right hook->, green, thick] (A) to node [auto]{$\int x dx$} (C);
\draw[->>, red, thick] (C) to node [below]{$(r, 4, 3)$} (D);
```

```
\path (D) edge[ out=140, in=50, looseness=0.8, loop, distance=2cm, ->]
node[right=4pt] {$ (r, 2, 2)$ } (D);
```

```
\draw[-, red, loop above,distance=1cm,thick] (B) to node [auto]{$(r, 2, 2)$} (B);
\end{tikzpicture}
```

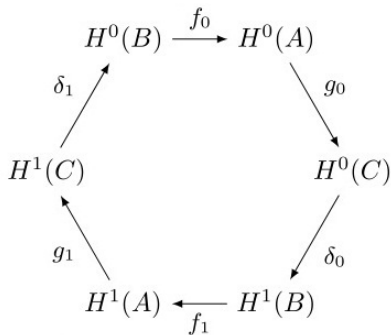


```

\begin{tikzpicture}[>=latex]
  \def\radius{2cm} % change to an appropriate value
  \node (h0A) at (60:\radius) {$H^0(A)$};
  \node (h0C) at (0:\radius) {$H^0(C)$};
  \node (h1B) at (-60:\radius) {$H^1(B)$};
  \node (h1A) at (-120:\radius) {$H^1(A)$};
  \node (h1C) at (180:\radius) {$H^1(C)$};
  \node (h0B) at (120:\radius) {$H^0(B)$};

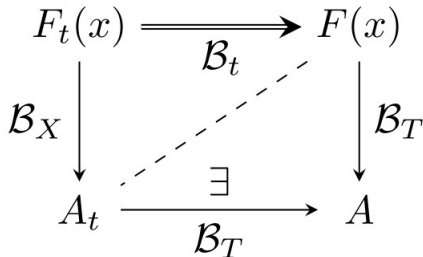
  \path[->,font=\small]
    (h0A) edge node[auto] {$g_0$} (h0C)
    (h0C) edge node[auto] {$\delta_0$} (h1B)
    (h1B) edge node[auto] {$f_1$} (h1A)
    (h1A) edge node[auto] {$g_1$} (h1C)
    (h1C) edge node[auto] {$\delta_1$} (h0B)
    (h0B) edge node[auto] {$f_0$} (h0A);
\end{tikzpicture}

```



By Matrix

```
\begin{tikzpicture}
\matrix (m) [matrix of math nodes,row sep=3em
,column sep=4em,minimum width=2em]
{
F_t(x) & F(x) \\
A_t & A \\
};
\path[-stealth]
(m-1-1) edge node [left] {\mathcal{B}_X} (m-2-1)
edge [double] node [below] {\mathcal{B}_t} (m-1-2)
(m-2-1.east|m-2-2) edge node [below] {\mathcal{B}_T}
node [above] {\exists} (m-2-2)
(m-1-2) edge node [right] {\mathcal{B}_T} (m-2-2)
\end{tikzpicture}
```



..

By Variables

```
\begin{tikzpicture}[thick,scale=0.8]
  \draw \foreach \x in {0,36,...,324}
  {
    (\x:2) node {} -- (\x+108:2)
    (\x-10:3) node {} -- (\x+5:4)
    (\x-10:3) -- (\x+36:2)
    (\x-10:3) -- (\x+170:3)
    (\x+5:4) node {} -- (\x+41:4)
  };
\end{tikzpicture}\quad
```

