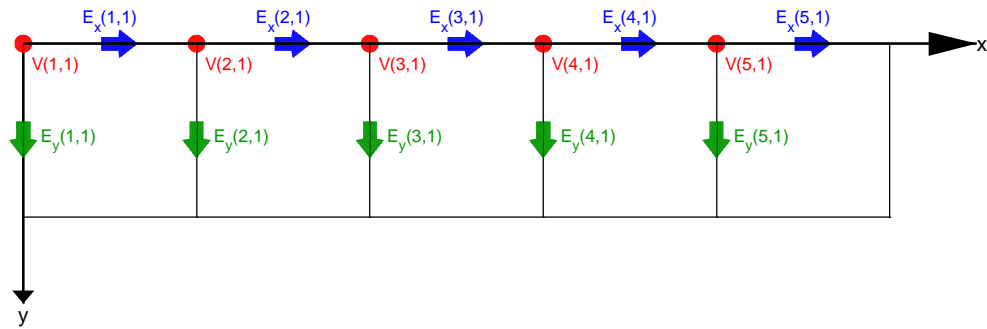


EXAMPLES OF DERIVATIVE MATRICES GENERATED USING TLDER()

`tllder([5 1],[1 1])`



DVX =

$$\begin{bmatrix} -1 & 1 & 0 & 0 & 0 \\ 0 & -1 & 1 & 0 & 0 \\ 0 & 0 & -1 & 1 & 0 \\ 0 & 0 & 0 & -1 & 1 \\ 0 & 0 & 0 & 0 & -1 \end{bmatrix}$$

DVY =

$$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

DEX =

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ -1 & 1 & 0 & 0 & 0 \\ 0 & -1 & 1 & 0 & 0 \\ 0 & 0 & -1 & 1 & 0 \\ 0 & 0 & 0 & -1 & 1 \end{bmatrix}$$

DEY =

$$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

`tllder([1 5],[1 1])`

DVX =

$$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 &] \\ 0 & 0 & 0 & 0 & 0 &] \\ 0 & 0 & 0 & 0 & 0 &] \\ 0 & 0 & 0 & 0 & 0 &] \\ 0 & 0 & 0 & 0 & 0 &] \end{bmatrix}$$

DVY =

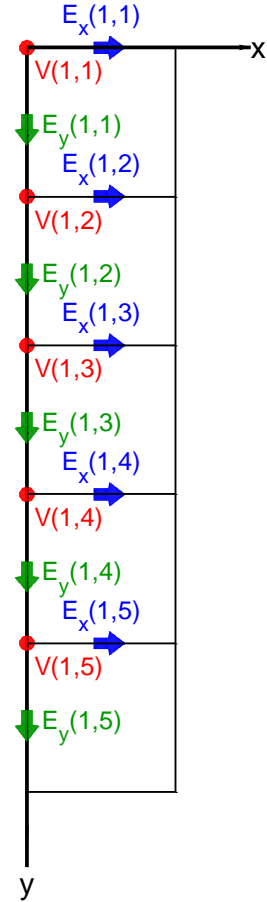
$$\begin{bmatrix} -1 & 1 & 0 & 0 & 0 &] \\ 0 & -1 & 1 & 0 & 0 &] \\ 0 & 0 & -1 & 1 & 0 &] \\ 0 & 0 & 0 & -1 & 1 &] \\ 0 & 0 & 0 & 0 & -1 &] \end{bmatrix}$$

DEX =

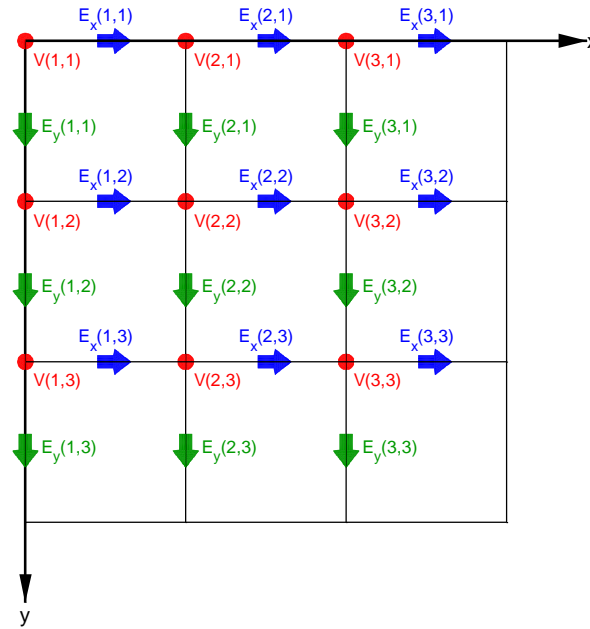
$$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 &] \\ 0 & 0 & 0 & 0 & 0 &] \\ 0 & 0 & 0 & 0 & 0 &] \\ 0 & 0 & 0 & 0 & 0 &] \\ 0 & 0 & 0 & 0 & 0 &] \end{bmatrix}$$

DEY =

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 0 &] \\ -1 & 1 & 0 & 0 & 0 &] \\ 0 & -1 & 1 & 0 & 0 &] \\ 0 & 0 & -1 & 1 & 0 &] \\ 0 & 0 & 0 & -1 & 1 &] \end{bmatrix}$$



`tlder([3 3],[0.1 0.25])`



DVX =

[	-10	10	0	0	0	0	0	0	0]
[	0	-10	10	0	0	0	0	0	0]
[	0	0	-10	0	0	0	0	0	0]
[	0	0	0	-10	10	0	0	0	0]
[	0	0	0	0	-10	10	0	0	0]
[	0	0	0	0	0	-10	0	0	0]
[	0	0	0	0	0	0	-10	10	0]
[	0	0	0	0	0	0	0	-10	10]
[	0	0	0	0	0	0	0	0	-10]

DVY =

[	-4	0	0	4	0	0	0	0	0]
[	0	-4	0	0	4	0	0	0	0]
[	0	0	-4	0	0	4	0	0	0]
[	0	0	0	-4	0	0	4	0	0]
[	0	0	0	0	-4	0	0	4	0]
[	0	0	0	0	0	-4	0	0	4]
[	0	0	0	0	0	0	-4	0	0]
[	0	0	0	0	0	0	0	-4	0]
[	0	0	0	0	0	0	0	0	-4]

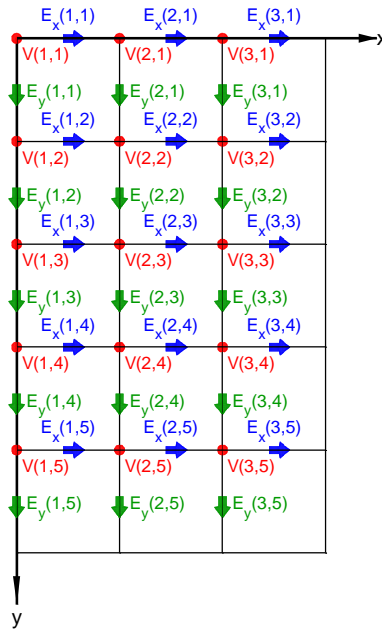
DEX =

$$\begin{bmatrix} 10 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -10 & 10 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -10 & 10 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 10 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -10 & 10 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -10 & 10 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 10 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -10 & 10 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -10 & 10 \end{bmatrix}$$

DEY =

$$\begin{bmatrix} 4 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 4 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 4 & 0 & 0 & 0 & 0 & 0 & 0 \\ -4 & 0 & 0 & 4 & 0 & 0 & 0 & 0 & 0 \\ 0 & -4 & 0 & 0 & 4 & 0 & 0 & 0 & 0 \\ 0 & 0 & -4 & 0 & 0 & 4 & 0 & 0 & 0 \\ 0 & 0 & 0 & -4 & 0 & 0 & 4 & 0 & 0 \\ 0 & 0 & 0 & 0 & -4 & 0 & 0 & 4 & 0 \\ 0 & 0 & 0 & 0 & 0 & -4 & 0 & 0 & 4 \end{bmatrix}$$

`tllder([3 5],[0.1 0.25])`



DVX =

[	-10	10	0	0	0	0	0	0	0	0	0	0	0	0	0]
[	0	-10	10	0	0	0	0	0	0	0	0	0	0	0	0]
[	0	0	-10	0	0	0	0	0	0	0	0	0	0	0	0]
[	0	0	0	-10	10	0	0	0	0	0	0	0	0	0	0]
[	0	0	0	0	0	-10	10	0	0	0	0	0	0	0	0]
[	0	0	0	0	0	0	-10	0	0	0	0	0	0	0	0]
[	0	0	0	0	0	0	0	-10	10	0	0	0	0	0	0]
[	0	0	0	0	0	0	0	0	-10	10	0	0	0	0	0]
[	0	0	0	0	0	0	0	0	0	-10	0	0	0	0	0]
[	0	0	0	0	0	0	0	0	0	0	-10	10	0	0	0]
[	0	0	0	0	0	0	0	0	0	0	0	-10	0	0	0]
[	0	0	0	0	0	0	0	0	0	0	0	0	-10	10	0]
[	0	0	0	0	0	0	0	0	0	0	0	0	0	-10	10]
[	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-10]

DVY =

[	-4	0	0	4	0	0	0	0	0	0	0	0	0	0	0]
[	0	-4	0	0	4	0	0	0	0	0	0	0	0	0	0]
[	0	0	-4	0	0	4	0	0	0	0	0	0	0	0	0]
[	0	0	0	-4	0	0	4	0	0	0	0	0	0	0	0]
[	0	0	0	0	0	-4	0	4	0	0	0	0	0	0	0]
[	0	0	0	0	0	0	-4	0	4	0	0	0	0	0	0]
[	0	0	0	0	0	0	0	0	-4	0	4	0	0	0	0]
[	0	0	0	0	0	0	0	0	0	-4	0	4	0	0	0]
[	0	0	0	0	0	0	0	0	0	0	-4	0	4	0	0]
[	0	0	0	0	0	0	0	0	0	0	0	-4	0	0	4]
[	0	0	0	0	0	0	0	0	0	0	0	0	-4	0	0]
[	0	0	0	0	0	0	0	0	0	0	0	0	0	-4	0]

[0 0 0 0 0 0 0 0 0 0 0 0 0 0 -4]

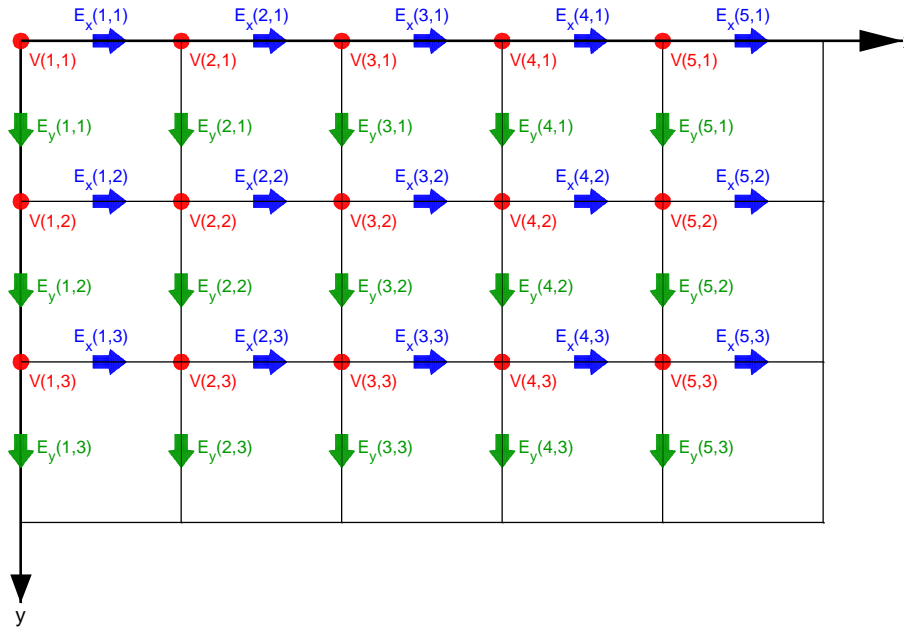
DEX =

```
[ 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 ]
[ -10 10 0 0 0 0 0 0 0 0 0 0 0 0 0 ]
[ 0 -10 10 0 0 0 0 0 0 0 0 0 0 0 0 ]
[ 0 0 0 10 0 0 0 0 0 0 0 0 0 0 0 ]
[ 0 0 0 -10 10 0 0 0 0 0 0 0 0 0 0 ]
[ 0 0 0 0 -10 10 0 0 0 0 0 0 0 0 0 ]
[ 0 0 0 0 0 0 10 0 0 0 0 0 0 0 0 ]
[ 0 0 0 0 0 0 -10 10 0 0 0 0 0 0 0 ]
[ 0 0 0 0 0 0 0 -10 10 0 0 0 0 0 0 ]
[ 0 0 0 0 0 0 0 0 0 10 0 0 0 0 0 ]
[ 0 0 0 0 0 0 0 0 0 -10 10 0 0 0 0 ]
[ 0 0 0 0 0 0 0 0 0 0 -10 10 0 0 0 ]
[ 0 0 0 0 0 0 0 0 0 0 0 -10 10 0 0 ]
[ 0 0 0 0 0 0 0 0 0 0 0 0 -10 10 ]
```

DEY =

```
[ 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 ]
[ 0 4 0 0 0 0 0 0 0 0 0 0 0 0 0 ]
[ 0 0 4 0 0 0 0 0 0 0 0 0 0 0 0 ]
[ -4 0 0 4 0 0 0 0 0 0 0 0 0 0 0 ]
[ 0 -4 0 0 4 0 0 0 0 0 0 0 0 0 0 ]
[ 0 0 -4 0 0 4 0 0 0 0 0 0 0 0 0 ]
[ 0 0 0 -4 0 0 4 0 0 0 0 0 0 0 0 ]
[ 0 0 0 0 0 -4 0 0 4 0 0 0 0 0 0 ]
[ 0 0 0 0 0 0 -4 0 0 4 0 0 0 0 0 ]
[ 0 0 0 0 0 0 0 -4 0 0 4 0 0 0 0 ]
[ 0 0 0 0 0 0 0 0 -4 0 0 4 0 0 0 ]
[ 0 0 0 0 0 0 0 0 0 -4 0 0 4 0 0 ]
[ 0 0 0 0 0 0 0 0 0 0 -4 0 0 4 0 ]
[ 0 0 0 0 0 0 0 0 0 0 0 -4 0 0 4 ]
```

`tlder([5 3],[0.1 0.25])`



DVX =

[	-10	10	0	0	0	0	0	0	0	0	0	0	0	0]
[	0	-10	10	0	0	0	0	0	0	0	0	0	0	0]
[	0	0	-10	10	0	0	0	0	0	0	0	0	0	0]
[	0	0	0	-10	10	0	0	0	0	0	0	0	0	0]
[	0	0	0	0	-10	10	0	0	0	0	0	0	0	0]
[	0	0	0	0	0	-10	10	0	0	0	0	0	0	0]
[	0	0	0	0	0	0	-10	10	0	0	0	0	0	0]
[	0	0	0	0	0	0	0	-10	10	0	0	0	0	0]
[	0	0	0	0	0	0	0	0	-10	10	0	0	0	0]
[	0	0	0	0	0	0	0	0	0	-10	10	0	0	0]
[	0	0	0	0	0	0	0	0	0	0	-10	10	0	0]
[	0	0	0	0	0	0	0	0	0	0	0	-10	10	0]
[	0	0	0	0	0	0	0	0	0	0	0	0	-10	10]
[	0	0	0	0	0	0	0	0	0	0	0	0	0	-10]

DVY =

```
[ -4  0  0  0  0  4  0  0  0  0  0  0  0  0  0 ]
[  0 -4  0  0  0  0  4  0  0  0  0  0  0  0  0 ]
[  0  0 -4  0  0  0  0  4  0  0  0  0  0  0  0 ]
[  0  0  0 -4  0  0  0  0  4  0  0  0  0  0  0 ]
[  0  0  0  0 -4  0  0  0  0  4  0  0  0  0  0 ]
[  0  0  0  0  0 -4  0  0  0  0  4  0  0  0  0 ]
[  0  0  0  0  0  0 -4  0  0  0  0  4  0  0  0 ]
[  0  0  0  0  0  0  0 -4  0  0  0  0  4  0  0 ]
[  0  0  0  0  0  0  0  0 -4  0  0  0  0  4  0 ]
[  0  0  0  0  0  0  0  0  0 -4  0  0  0  0  4 ]
[  0  0  0  0  0  0  0  0  0  0 -4  0  0  0  0 ]
[  0  0  0  0  0  0  0  0  0  0  0 -4  0  0  0 ]
[  0  0  0  0  0  0  0  0  0  0  0  0 -4  0  0 ]
[  0  0  0  0  0  0  0  0  0  0  0  0  0 -4  0 ]
[  0  0  0  0  0  0  0  0  0  0  0  0  0  0 -4 ]
```

DEX =

```
[ 10  0  0  0  0  0  0  0  0  0  0  0  0  0  0 ]
[ -10 10  0  0  0  0  0  0  0  0  0  0  0  0  0 ]
[  0 -10 10  0  0  0  0  0  0  0  0  0  0  0  0 ]
[  0  0 -10 10  0  0  0  0  0  0  0  0  0  0  0 ]
[  0  0  0 -10 10  0  0  0  0  0  0  0  0  0  0 ]
[  0  0  0  0  0 10  0  0  0  0  0  0  0  0  0 ]
[  0  0  0  0  0  0 -10 10  0  0  0  0  0  0  0 ]
[  0  0  0  0  0  0  0 -10 10  0  0  0  0  0  0 ]
[  0  0  0  0  0  0  0  0 -10 10  0  0  0  0  0 ]
[  0  0  0  0  0  0  0  0  0 -10 10  0  0  0  0 ]
[  0  0  0  0  0  0  0  0  0  0 -10 10  0  0  0 ]
[  0  0  0  0  0  0  0  0  0  0  0 -10 10  0  0 ]
[  0  0  0  0  0  0  0  0  0  0  0  0 -10 10  0 ]
[  0  0  0  0  0  0  0  0  0  0  0  0  0 -10 10 ]
```

DEY =

```
[ 4  0  0  0  0  0  0  0  0  0  0  0  0  0  0 ]
[  0  4  0  0  0  0  0  0  0  0  0  0  0  0  0 ]
[  0  0  4  0  0  0  0  0  0  0  0  0  0  0  0 ]
[  0  0  0  4  0  0  0  0  0  0  0  0  0  0  0 ]
[  0  0  0  0  4  0  0  0  0  0  0  0  0  0  0 ]
[ -4  0  0  0  0  4  0  0  0  0  0  0  0  0  0 ]
[  0 -4  0  0  0  0  4  0  0  0  0  0  0  0  0 ]
[  0  0 -4  0  0  0  0  4  0  0  0  0  0  0  0 ]
[  0  0  0 -4  0  0  0  0  4  0  0  0  0  0  0 ]
[  0  0  0  0  0 -4  0  0  0  4  0  0  0  0  0 ]
[  0  0  0  0  0  0 -4  0  0  0  4  0  0  0  0 ]
[  0  0  0  0  0  0  0 -4  0  0  0  4  0  0  0 ]
[  0  0  0  0  0  0  0  0 -4  0  0  0  4  0  0 ]
[  0  0  0  0  0  0  0  0  0 -4  0  0  0  4  0 ]
[  0  0  0  0  0  0  0  0  0  0 -4  0  0  0  4 ]
```