

? *Piecewise*

▼ System`

Piecewise

PiecewiseExpand

\$MaxPiecewiseCases

`Piecewise[{{val1, cond1}, {val2, cond2}, ...}]` represents

a piecewise function with values val_i in the regions defined by the conditions $cond_i$.

`Piecewise[{{val1, cond1}, ...], val]` uses default value val if none of the $cond_i$ apply. The default for val is 0. >

```
Clear[f]
```

```
f[x_] := Piecewise[{{x^2, x < 0}, {x, x > 0}}
```

```
f[3]
```

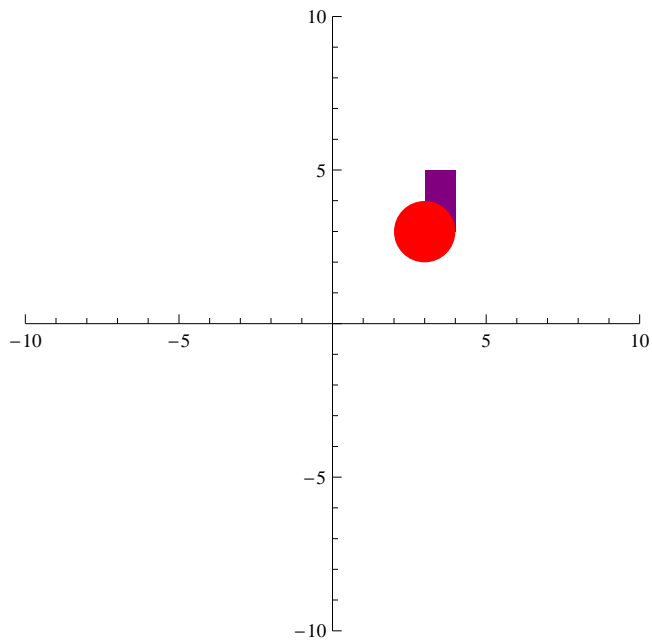
```
3
```

```
f[-4]
```

```
16
```

```
Graphics[{  
  {Purple, Rectangle[{0, 0}, {1, 2}]},  
  {Red, Disk[{0, 0}, 1]}  
}]
```

```
Graphics[{
  GeometricTransformation[
    {
      {Purple, Rectangle[{0, 0}, {1, 2}]},
      {Red, Disk[{0, 0}, 1]}
    },
    TranslationTransform[{3, 3}]
  ], Axes → True, PlotRange → 10]
```



move along function

```
f[x_] := 5 Sin[x];
Manipulate[
  Show[
    Plot[f[x], {x, -10, 10}],
    Graphics[{
      GeometricTransformation[
        {
          {Purple, Rectangle[{0, 0}, {1, 2}]},
          {Red, Disk[{0, 0}, 1]}
        },
        TranslationTransform[{x, f[x]}]
      ]
    }], Axes → True, PlotRange → 10, AspectRatio → Automatic
  ],
  {x, -10, 10}
]
```

move along piecewise function

```
f[x_] := Piecewise[{{5 Sin[x], x < 0}, {x, x > 0}}];
Manipulate[
  Show[
    Plot[f[x], {x, -10, 10}],
    Graphics[{
      GeometricTransformation[
        {
          {Purple, Rectangle[{0, 0}, {1, 2}]},
          {Red, Disk[{0, 0}, 1]}
        },
        TranslationTransform[{x, f[x]}]
      ]
    }], Axes → True, PlotRange → 10, AspectRatio → Automatic
  ],
  {x, -10, 10}
]
```

move along parametric function

```
r[t_] := 3 {Cos[t], Sin[t]};
Manipulate[
  Show[
    ParametricPlot[r[t], {t, -10, 10}],
    Graphics[{
      GeometricTransformation[
        {
          {Purple, Rectangle[{0, 0}, {1, 2}]},
          {Red, Disk[{0, 0}, 1]}
        },
        TranslationTransform[r[t]]
      ]
    }], Axes → True, PlotRange → 10, AspectRatio → Automatic
  ],
  {t, -10, 10}
]
```

another parametric function

```
r[t_] := 8 {Cos[3 t], Sin[2 t]};
Manipulate[
  Show[
    ParametricPlot[r[t], {t, 0, 2 Pi}],
    Graphics[{
      GeometricTransformation[
        {
          {Purple, Rectangle[{0, 0}, {1, 2}]},
          {Red, Disk[{0, 0}, 1]}
        },
        TranslationTransform[r[t]]
      ]
    }], Axes → True, PlotRange → 10, AspectRatio → Automatic
  ],
  {t, 0, 2 Pi}
]
```

more than one object

```
r[t_] := 8 {Cos[3 t], Sin[2 t]};

myobject[t_] := GeometricTransformation[
  {
    {Purple, Rectangle[{0, 0}, {1, 2}]},
    {Red, Disk[{0, 0}, 1]}
  },
  TranslationTransform[r[t]]
];

Manipulate[
  Show[
    ParametricPlot[r[t], {t, 0, 2 Pi}],
    Graphics[{
      myobject[t], myobject[t + Pi / 3]
    }], Axes → True, PlotRange → 10, AspectRatio → Automatic
  ],
  {t, 0, 2 Pi, ControlType → Animator}
]
```