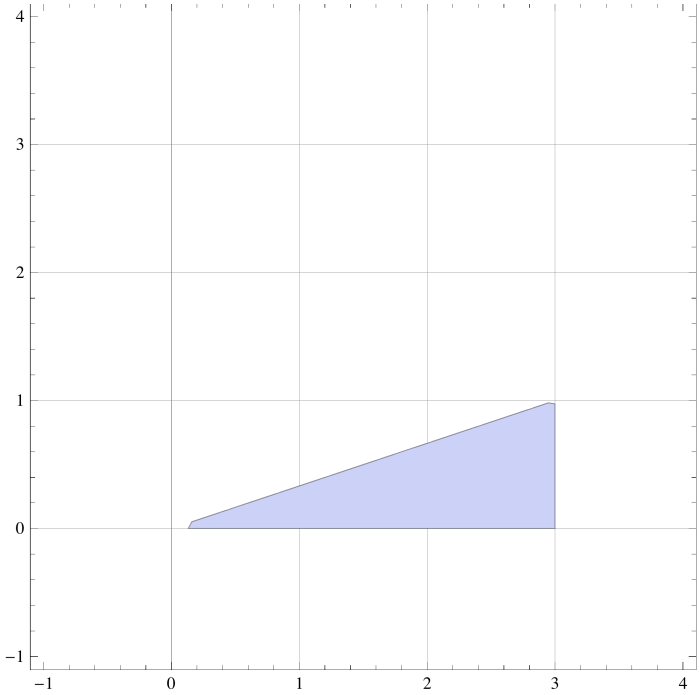
```
(* Un triangolo descritto con funzioni di x  *)

reg0 = RegionPlot[ 0 ≤ x && x <= 3 && 0 ≤ y && y ≤ x / 3,
   {x, -1, 4}, {y, -1, 4}, GridLines -> Automatic]
```




```
(* L' area del triangolo come integrale iterato *)

int0 = Integrate[1, {x, 0, 3}, {y, 0, x / 3}]
```

$$\frac{3}{2}$$

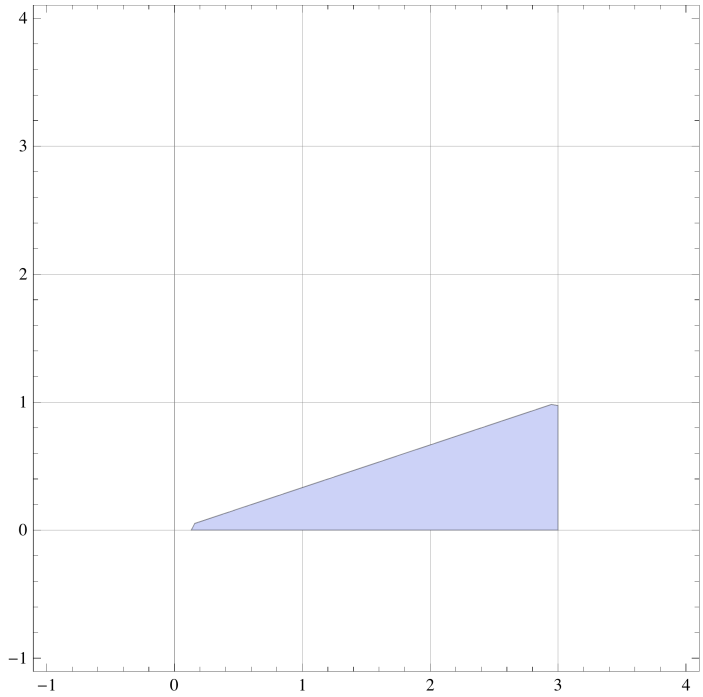
```
(* Cambiando l' ordine di integrazione, si ottiene un risultato errato *)

errore = Integrate[1, {y, 0, x / 3}, {x, 0, 3}]
```

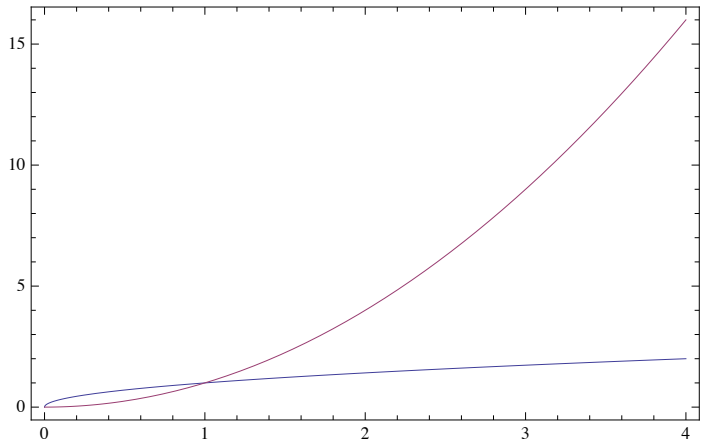
x

```
(* Il triangolo di prima, usando funzioni di y *)
```

```
reg1 = RegionPlot[ 0 <= y && y <= 1 && 3 * y <= x && x <= 3,
   {x, -1, 4}, {y, -1, 4}, GridLines -> Automatic]
```

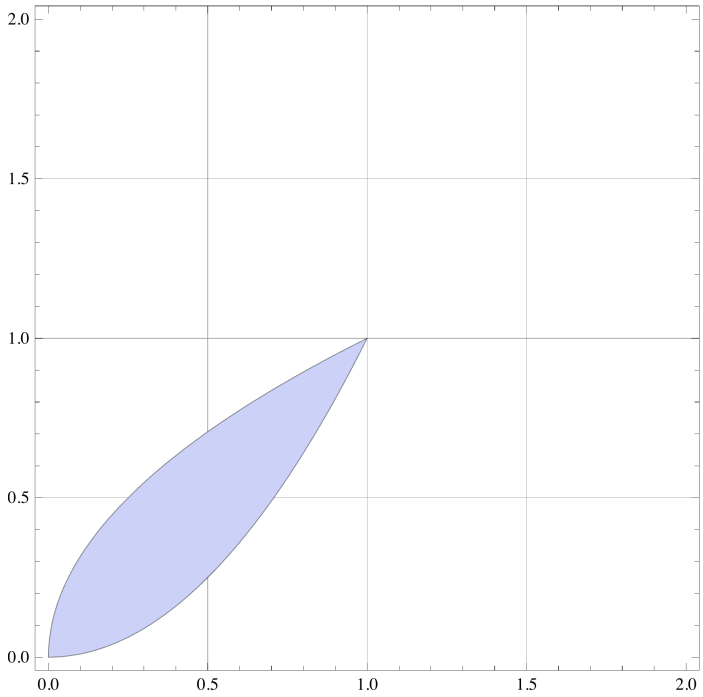



```
plt = Plot[{Sqrt[x], x^2}, {x, 0, 4}]
```




```
(* Un altro dominio rappresentato tramite funzioni di x *)
```

```
reg2 = RegionPlot[ x^2 <= y && y <= Sqrt[x] && 0 <= x && x <= 1,
   {x, 0, 2}, {y, 0, 2}, GridLines -> Automatic]
```



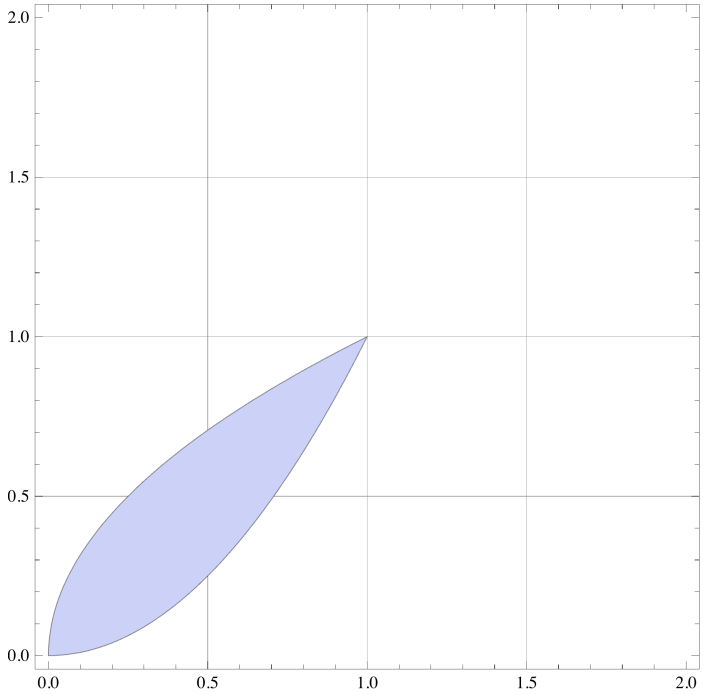

```
(* L' area del dominio *)

int2 = Integrate[1, {x, 0, 1}, {y, x^2, Sqrt[x]}]
```

$$\frac{1}{3}$$

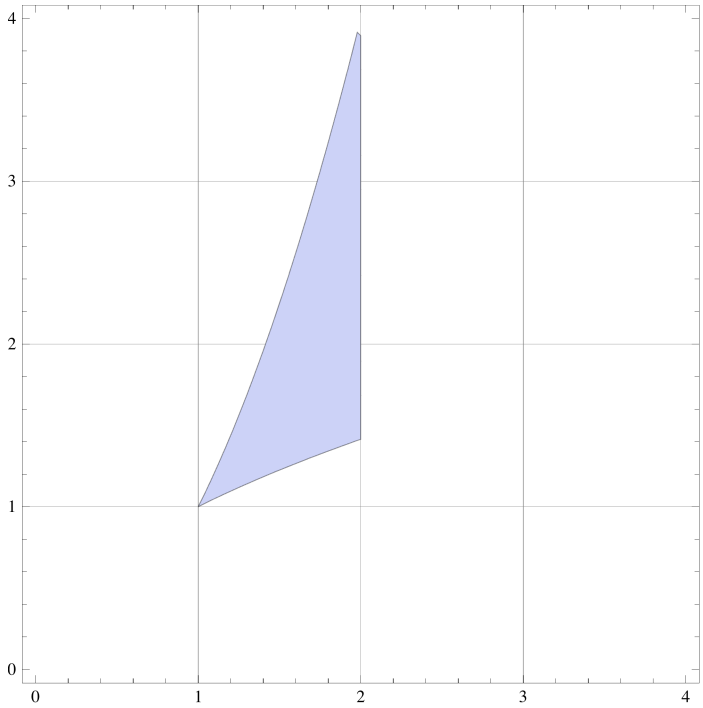
```
(* Lo stesso dominio, rappresentato con funzioni di y *)

reg2a = RegionPlot[ y^2 ≤ x && x <= Sqrt[y] && 0 ≤ y && y <= 1,
   {x, 0, 2}, {y, 0, 2}, GridLines -> Automatic]
```




```
(* seguono altri domini rappresentati usando prima funzioni di "x", poi di "y" *)
```

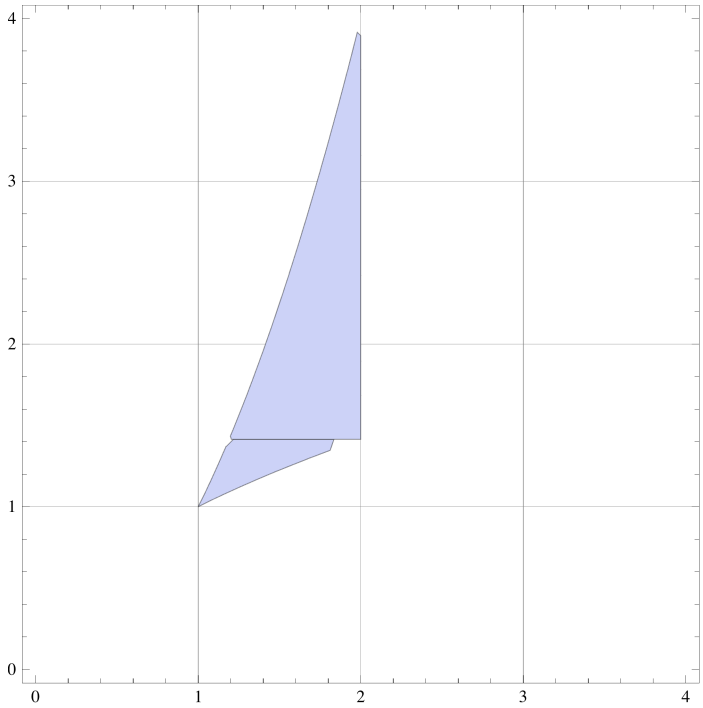
```
reg3 = RegionPlot[ Sqrt[x] <= y && y <= x^2 && 1 <= x && x ≤ 2,
   {x, 0, 4}, {y, 0, 4}, GridLines -> Automatic]
```




```
reg3a = RegionPlot[ Sqrt[y] ≤ x && x <= y^2 && 1 ≤ y && y ≤ Sqrt[2],
    {x, 0, 4}, {y, 0, 4}, GridLines -> Automatic];

reg3b = RegionPlot[ Sqrt[y] ≤ x && x <= 2 && Sqrt[2] ≤ y && y ≤ 4,
    {x, 0, 4}, {y, 0, 4}, GridLines -> Automatic];

Show[reg3a, reg3b]
```




```
(*  La "sbavatura" alla base (manca un pezzo di dominio vicino al punto (2,Sqrt[2]))
 e' un artefatto di Mathematica *)
```

```
int1 = Integrate[1, {x, 0, 1}, {y, x^2, Sqrt[x]}]
```

$$\frac{1}{3}$$

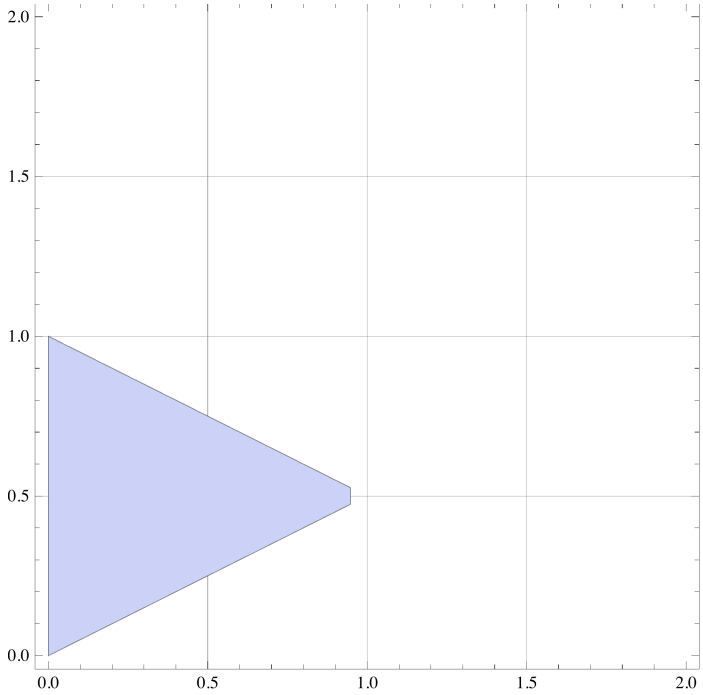
```
int2 = Integrate[1, {y, 0, 1}, {x, y^2, Sqrt[y]}]
```

$$\frac{1}{3}$$

```
(* notare: non bisogna cambiare l'ordine delle variabili *)
int3 = Integrate[1, {x, y^2, Sqrt[y]}, {y, 0, 1}]
```

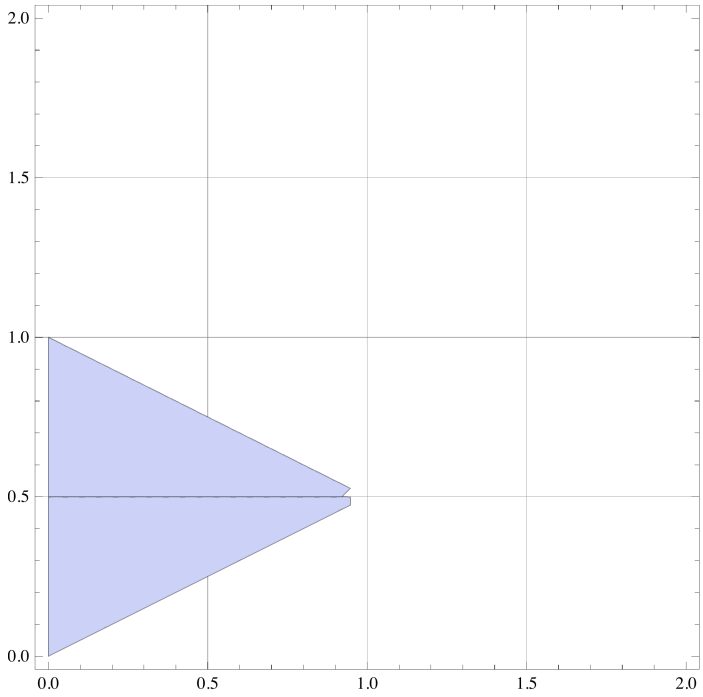
$$\sqrt{y} - y^2$$

```
reg4 = RegionPlot[ 0 ≤ x && x <= 1 && x / 2 ≤ y && y <= 1 - x / 2,
  {x, 0, 2}, {y, 0, 2}, GridLines -> Automatic]
```




```
reg4a = RegionPlot[ 0 ≤ x && x ≤ 2 * y && 0 ≤ y && y ≤ 1 / 2,
   {x, 0, 2}, {y, 0, 2}, GridLines -> Automatic];
reg4b = RegionPlot[ 0 ≤ x && x ≤ 2 (1 - y) && 1 / 2 ≤ y && y ≤ 1,
   {x, 0, 2}, {y, 0, 2}, GridLines -> Automatic];
```

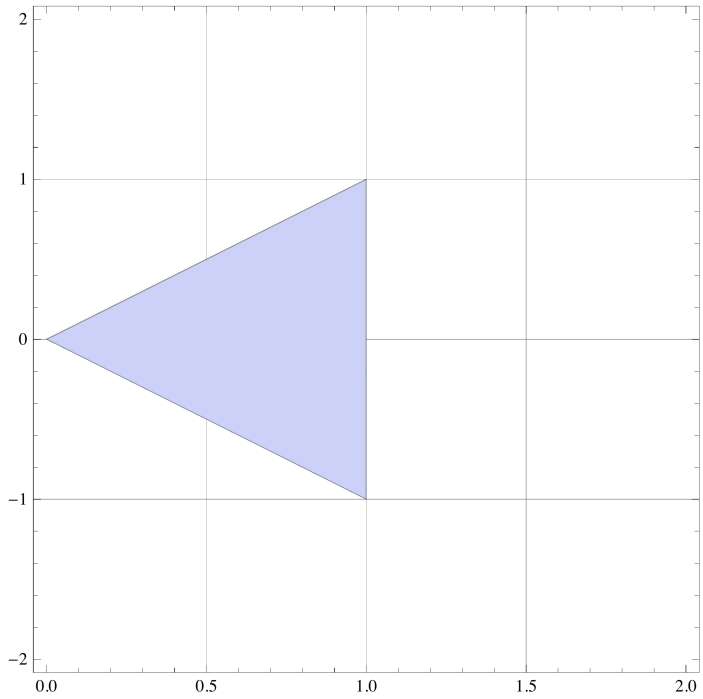
```
Show[reg4a, reg4b]
```



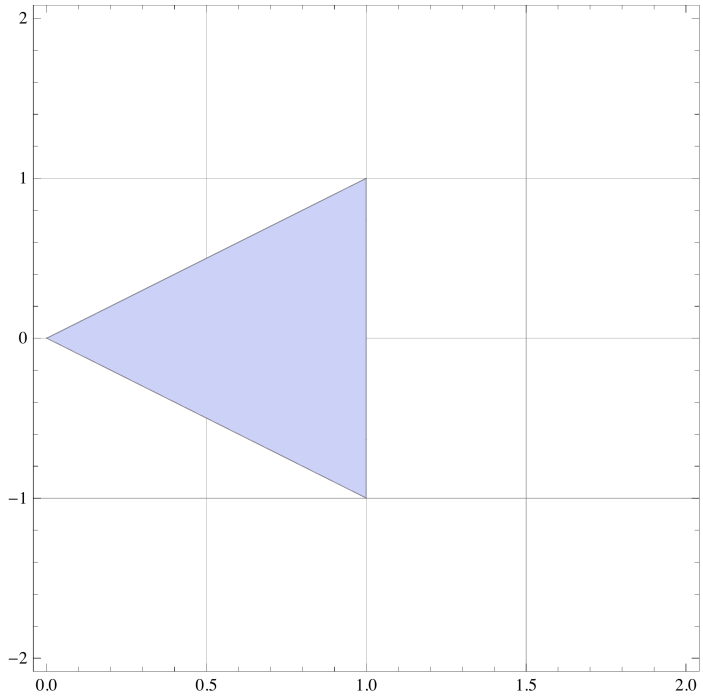

```
int4 = Integrate[1, {x, y^2, Sqrt[y]}, {y, 0, 1}]
```

$$\sqrt{y} - y^2$$

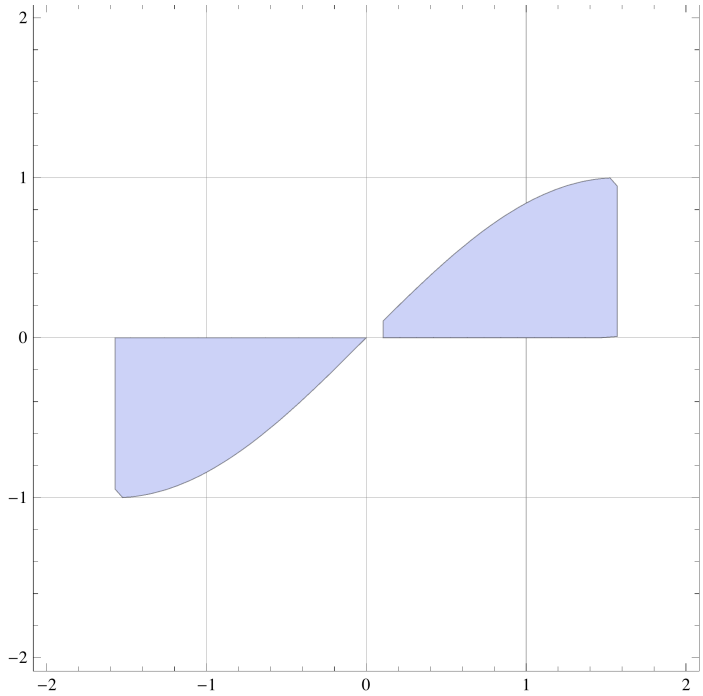
```
reg6 = RegionPlot[ -x ≤ y && y <= x && 0 ≤ x && x <= 1,
   {x, 0, 2}, {y, -2, 2}, GridLines -> Automatic]
```



```
reg7 = RegionPlot[ Abs[y] ≤ x && x <= 1 && -1 ≤ y && y <= 1,
   {x, 0, 2}, {y, -2, 2}, GridLines -> Automatic]
```

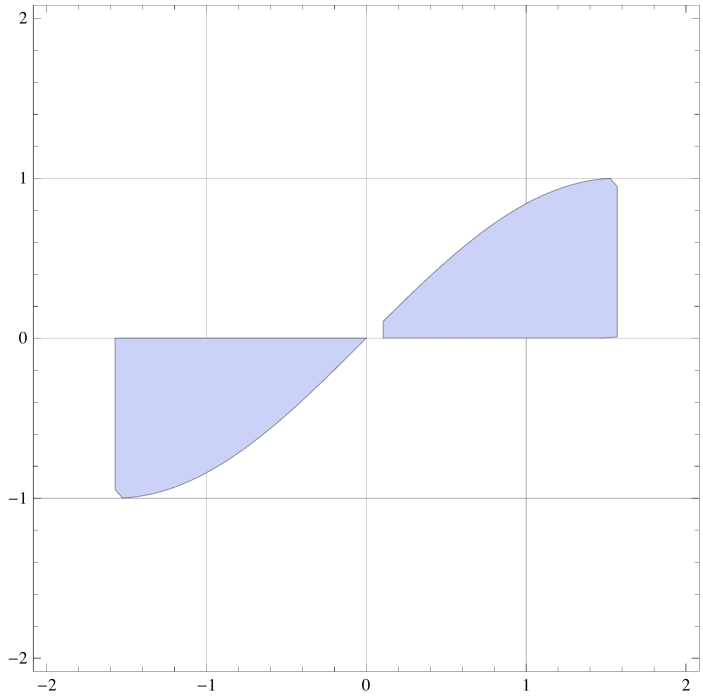



```
reg8a = RegionPlot[ 0 ≤ x ≤ Pi / 2 && 0 ≤ y ≤ Sin[x],
    {x, -2, 2}, {y, -2, 2}, GridLines -> Automatic];
reg8b = RegionPlot[ -Pi / 2 ≤ x ≤ 0 && Sin[x] ≤ y ≤ 0,
    {x, -2, 2}, {y, -2, 2}, GridLines -> Automatic];
Show[reg8a, reg8b]
```

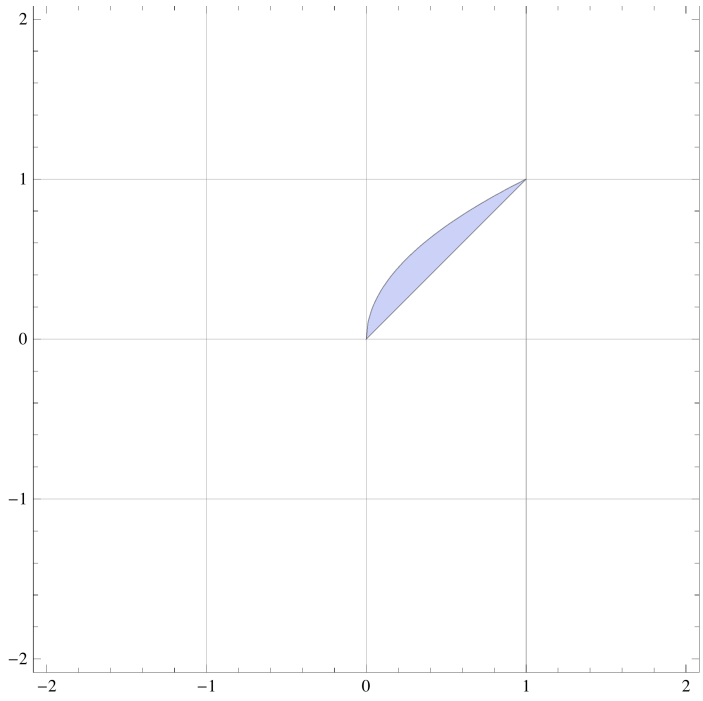



```
reg8ai = RegionPlot[ 0 ≤ y ≤ 1 && ArcSin[y] ≤ x ≤ Pi / 2,
    {x, -2, 2}, {y, -2, 2}, GridLines -> Automatic];
reg8bi = RegionPlot[ -1 ≤ y ≤ 0 && -Pi / 2 ≤ x <= ArcSin[y],
    {x, -2, 2}, {y, -2, 2}, GridLines -> Automatic];
```

```
Show[reg8ai, reg8bi]
```




```
reg9 = RegionPlot[ 0 ≤ x ≤ 1 && x ≤ y ≤ Sqrt[x],
   {x, -2, 2}, {y, -2, 2}, GridLines -> Automatic]
```



```
reg9i = RegionPlot[ 0 ≤ y ≤ 1 && y^2 ≤ x ≤ y, {x, -2, 2}, {y, -2, 2}, GridLines -> Automatic]
```