CALCOLO DI INTEGRALI DOPPI (Es. Prof. Colombo)

Esercizio 1

In[9]:=
```
Integrate[x y Cos[x + y], {x, 0, Pi / 2}, {y, 0, Pi}]
```

Out[9]= $2 - 2\pi$

Esercizio 2

In[10]:=
```
Integrate[(x^2 + y^2) Boole[0 < y < x^2 && -1 < x < 1], {x, -1, 1}, {y, 0, 1}]
```

Out[10]= $\frac{52}{105}$

Esercizio 3

Integrale su C1

In[11]:=
```
Integrate[x y * Boole[1 < x^2 / 4 + y^2 < 4], {x, 0, 4}, {y, 0, 4}]
```

Out[11]= $\frac{15}{2}$

Integrale su C2

In[12]:=
```
Integrate[x y * Boole[0 < y < 2 Sqrt[3] / Sqrt[5] && Sqrt[y^2 + 4] < x < 2 Sqrt[4 - y^2]],
 {x, 0, 4}, {y, 0, 4}]
```

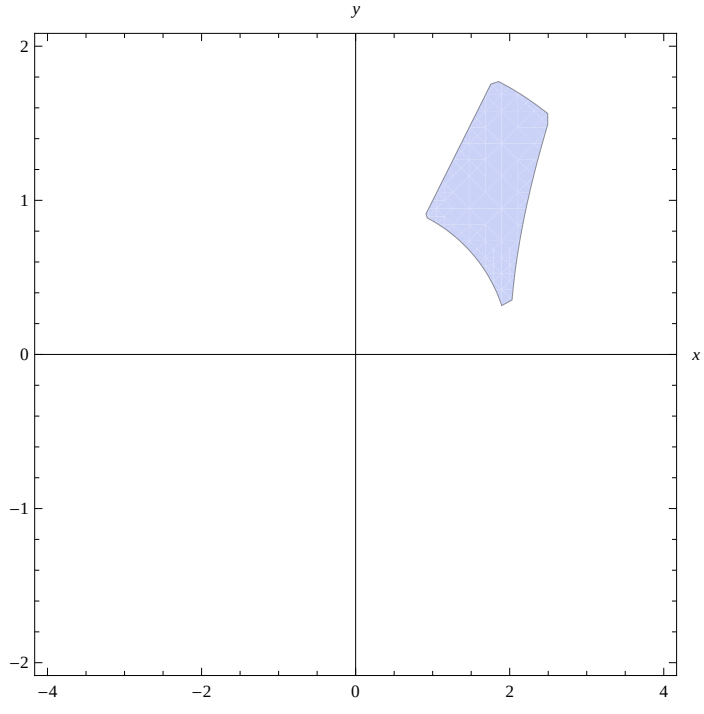
Out[12]= $\frac{18}{5}$

In[20]:=
```
RegionPlot[1 < x^2 / 4 + y^2 < 4 && 0 < x^2 - y^2 < 4 && x > 0 && y > 0,
 {x, -4, 4}, {y, -2, 2}, Axes → True, AxesLabel → {x, y}]
```

La regione

C

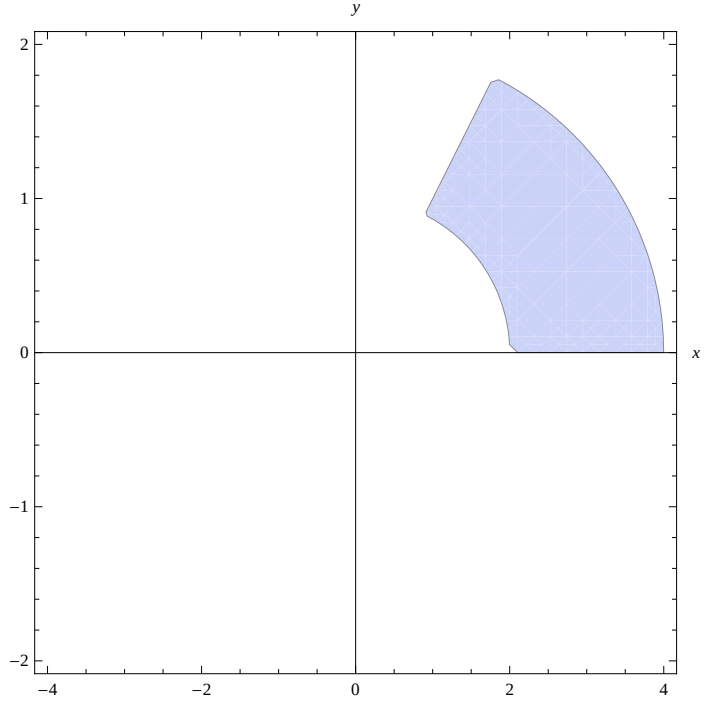
Out[20]=



Out[21]= C La regione

In[22]:=
```
RegionPlot[1 < x^2 / 4 + y^2 < 4 && 0 < y < x ,
 {x, -4, 4}, {y, -2, 2}, Axes → True, AxesLabel → {x, y}]
```

Out[22]=



C1

In[23]:=
```
RegionPlot[ 0 < y < x && Sqrt[y^2 + 4] < x < 2 Sqrt[4 - y^2] ,
 {x, -4, 4}, {y, 0, 2 Sqrt[3] / Sqrt[5]}, Axes → True, AxesLabel → {x, y}]
```

Out[23]=