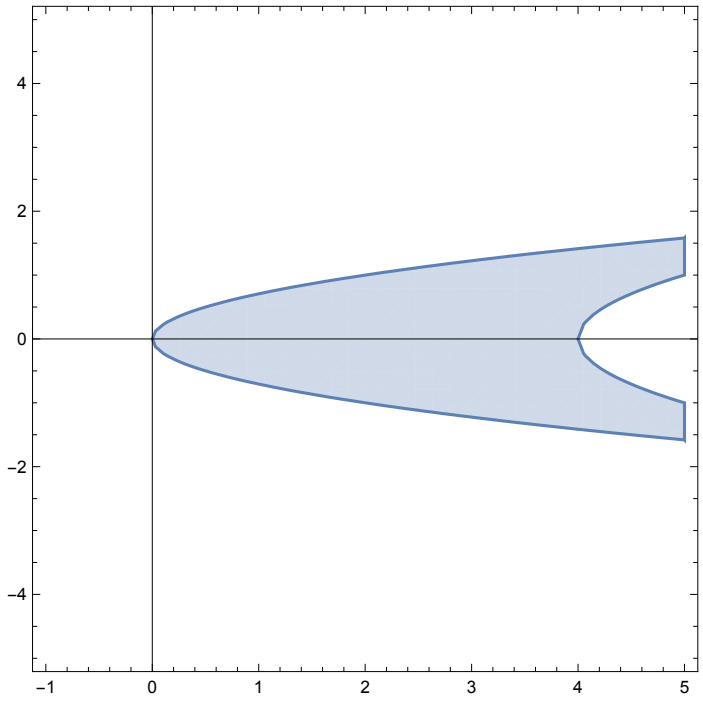
```
(* Problem 1 | Quiz 39 | A period *)
```

In[2]:=
```
RegionPlot[x > 2 y^2 && x < 4 + y^2, {x, -1, 5}, {y, -5, 5}, Axes → True]
```

Out[2]=



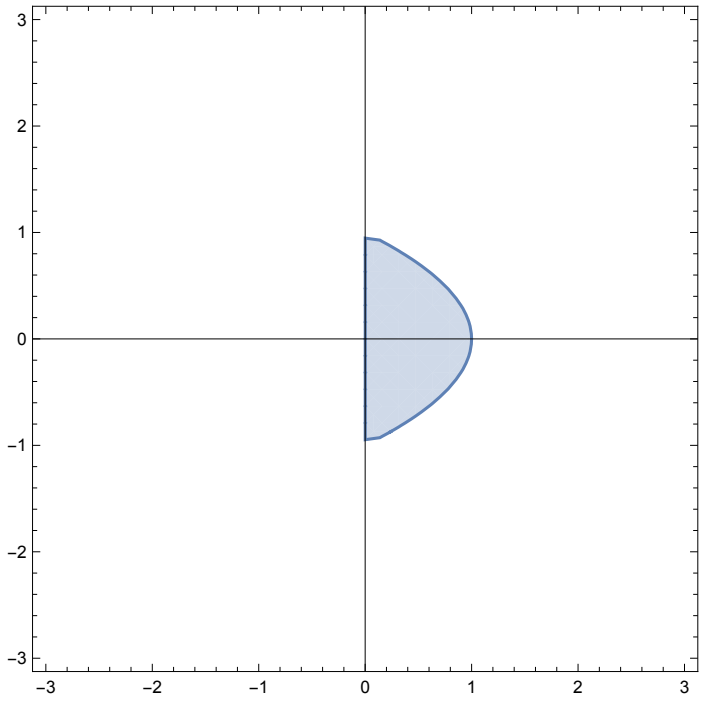
In[3]:=
```
Integrate[(4 + y^2) - (2 y^2), {y, -2, 2}]
```

Out[3]=
$$\frac{32}{3}$$

```
(* Problem 2 | Quiz 39 | A period *)
```

In[4]:=
```
RegionPlot[0 < x < 1 - y^2, {x, -3, 3}, {y, -3, 3}, Axes → True]
```

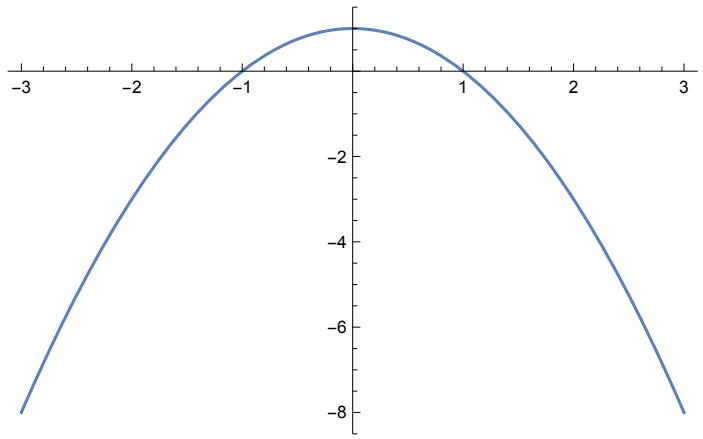
Out[4]=




```
(* Problem 3 | Quiz 39 | A period *)
```

In[6]:=
```
Plot[1 - x^2, {x, -3, 3}]
```

Out[6]=

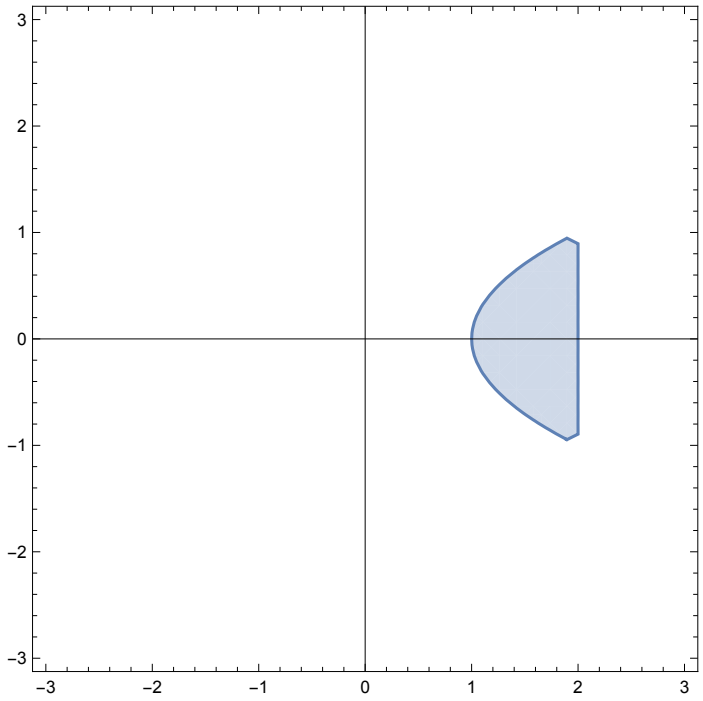


In[1]:=
```
Integrate[4 (1 - y), {y, 0, 1}]
```

Out[1]= 2

```
(* Problem 4 | Quiz 39 | A period *)
```

In[4]:=
```
RegionPlot[y^2 + 1 < x < 2, {x, -3, 3}, {y, -3, 3}, Axes → True]
```

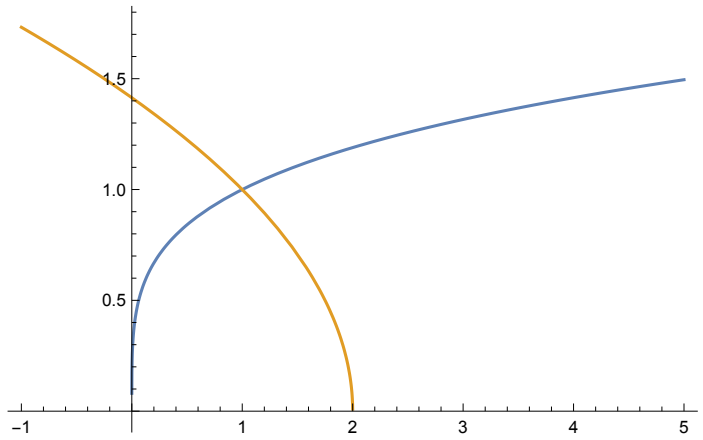
Out[4]=


In[5]:=
```
Integrate[2 Pi (y + 2) (2 - (y^2 + 1)), {y, -1, 1}] (* Shell Method *)
```

Out[5]=
$$\frac{16\,\pi}{3}$$

```
(* Problem 1 | Quiz 39 | F period *)
```

In[10]:=
```
Plot[{x^(1 / 4), Sqrt[2 - x]}, {x, -1, 5}, Axes → True]
```

Out[10]=


In[12]:=
```
MyArea = Integrate[(2 - y^2) - (y^4), {y, 0, 1}]
```

In[14]:=
```
22/15 // N
```

Out[14]=
```
1.46667
```

```
(* Or as a dx type *)
```

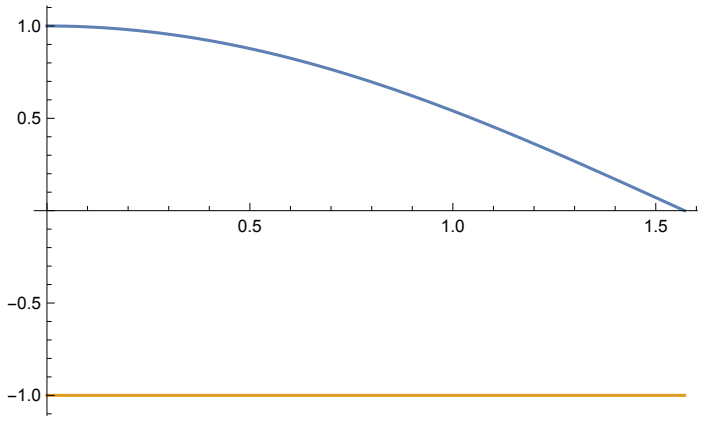
In[13]:=
```
Integrate[x^0.25, {x, 0, 1}] + Integrate[Sqrt[2 - x], {x, 1, 2}]
```

Out[13]=
```
1.46667
```

```
(* Problem 2 | Quiz 39 | F period *)
```

In[18]:=
```
Plot[{Cos[x], -1}, {x, 0, Pi / 2}]
```

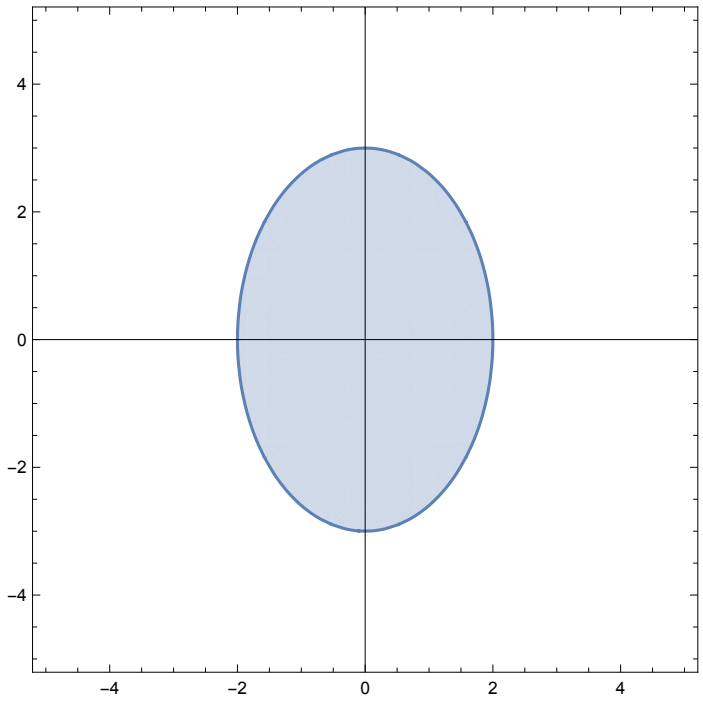
Out[18]=




```
(* Problem 3 | Quiz 39 | F period *)
```

In[20]:=
```
RegionPlot[9 x^2 + 4 y^2 < 36, {x, -5, 5}, {y, -5, 5}, Axes → True]
```

Out[20]=




```
(* Each triangle has dimensions: m, m,
and Sqrt[2]m. Since the hypotenuse is also y+y = 2y,
we find: m = Sqrt[2] y. The area of a typical cross section is: m^2 /2 =
  2 y^2  / 2 = y^2. In terms of x,
then the area becomes: A(x) = y ^2 = (36 - 9x^2) / 4 . *)
```

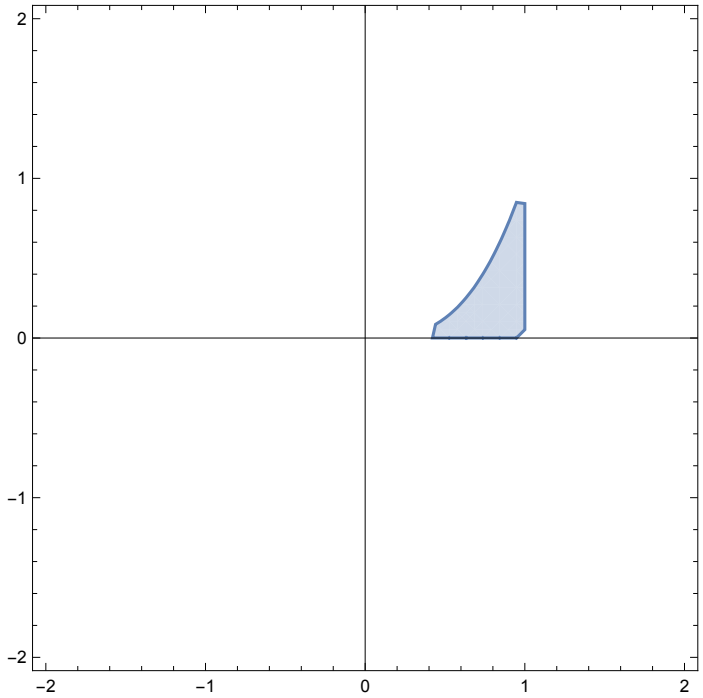
In[21]:=
```
Integrate[(36 - 9 x^2) / 4, {x, -2, 2}]
```

Out[21]= 24

```
(* Problem 4 | Quiz 39 | F period *)
```

In[24]:=
```
RegionPlot[0 < x < 1 && y < x^3 && y > 0, {x, -2, 2}, {y, -2, 2}, Axes → True]
```

Out[24]=



In[25]:=
```
WasherVolume = Pi Integrate[1^2 - (1 - x^3)^2, {x, 0, 1}]
```

Out[25]= $\frac{5\pi}{14}$

```
(* Or Shell Method: *)
```

In[26]:=
```
Integrate[2 Pi (1 - y) (1 - y^(1 / 3)), {y, 0, 1}]
```

Out[26]= $\frac{5\pi}{14}$