

In[19]:= **1 + 1**

Out[19]= 2

In[20]:= **1 / 2**

Out[20]= $\frac{1}{2}$

In[21]:= **1. / 2.**

Out[21]= 0.5

In[22]:= **N[1 / 2]**

Out[22]= 0.5

In[23]:= **Cos[Pi]**

Out[23]= -1

In[24]:= **a + b**

Out[24]= a + b

In[25]:= **ax^2 + bx + c**

Out[25]= $ax^2 + bx + c$

In[26]:= **x = 3**

Out[26]= 3

In[27]:= **x^2 + x^3**

Out[27]= 36

In[28]:= **Clear[x]**

In[37]:= **Factor[1 + 2 x + x^2]**

Out[37]= $(1 + x)^2$

In[38]:= **%**

Out[38]= $(1 + x)^2$

In[39]:= **Expand[%]**

Out[39]= $1 + 2 x + x^2$

In[42]:=

quadratic = a * x^2 + b * x + c

Out[42]= $c + b x + a x^2$

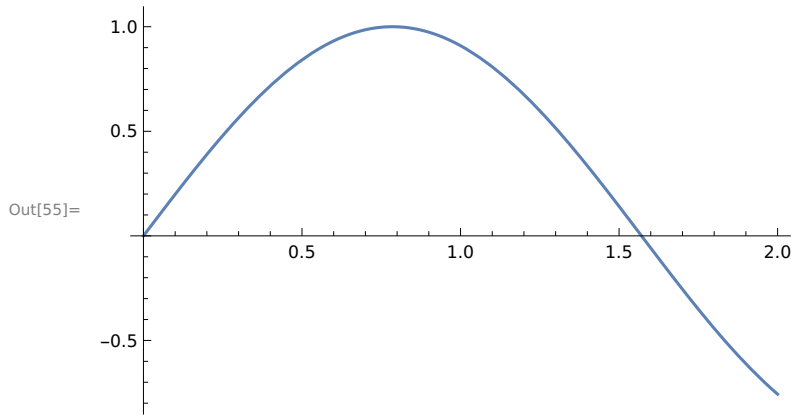
In[44]:= **quadratic /. x -> 2**

Out[44]= $4 a + 2 b + c$

In[45]:= **Solve[quadratic == 0, x]**

Out[45]= $\left\{ \left\{ x \rightarrow \frac{-b - \sqrt{b^2 - 4ac}}{2a} \right\}, \left\{ x \rightarrow \frac{-b + \sqrt{b^2 - 4ac}}{2a} \right\} \right\}$

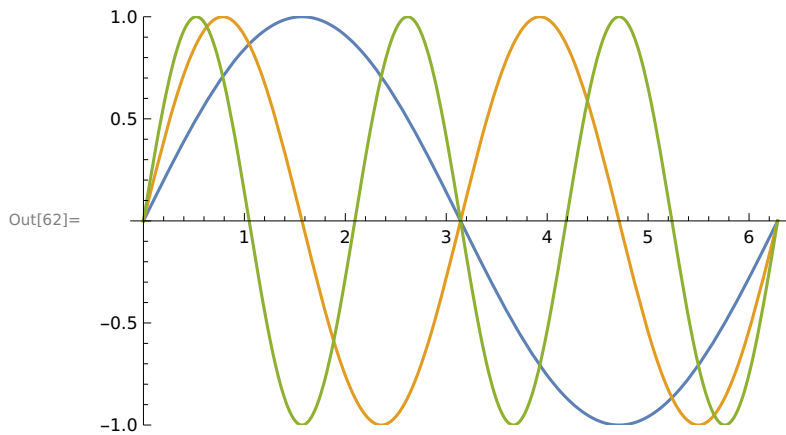
In[55]:= **Plot[Sin[2 * x], {x, 0, 2}]**



In[59]:= **sines = Table[Sin[a * x], {a, 1, 3}]**

Out[59]= {Sin[x], Sin[2 x], Sin[3 x]}

In[62]:= **Plot[sines, {x, 0, 2 * Pi}, PlotRange → {-1, 1}]**



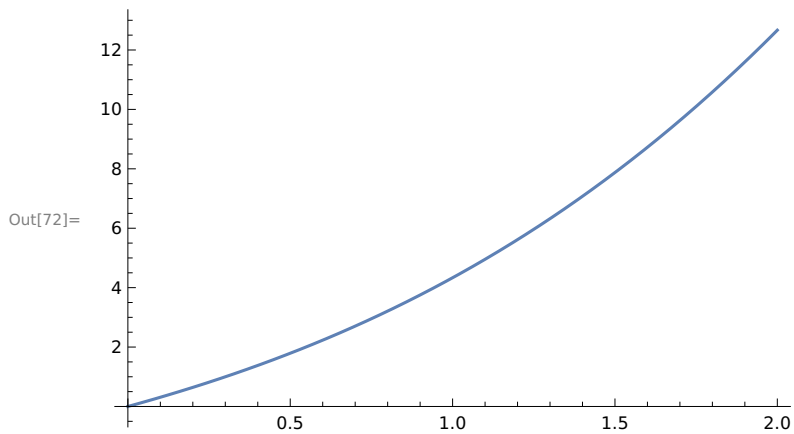
In[64]:= **D[quadratic, x]**

Out[64]= $b + 2ax$

In[71]:= **Integrate[quadratic, x]**

Out[71]= $cx + \frac{bx^2}{2} + \frac{ax^3}{3}$

In[72]:= **Plot[% /. {a → 1, b → 2, c → 3}, {x, 0, 2}]**



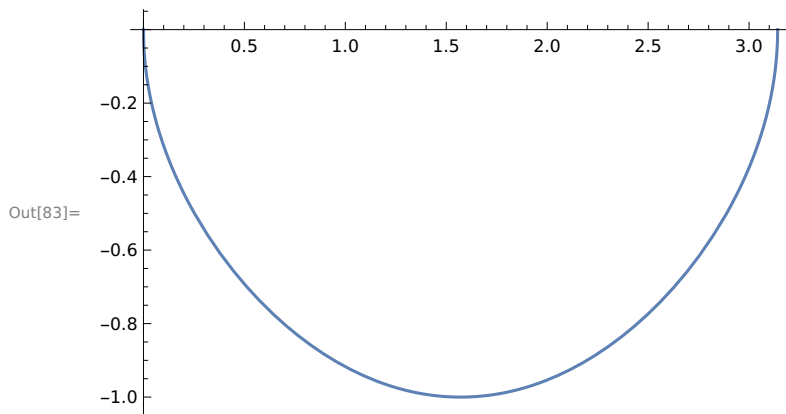
In[77]:= **solution = DSolve[y'[x] == y[x]^2, y, x]**

Out[77]= $\left\{ \left\{ y \rightarrow \text{Function}\left[\{x\}, -\sqrt{\text{Sin}[x]} \right] \right\}, \left\{ y \rightarrow \text{Function}\left[\{x\}, \sqrt{\text{Sin}[x]} \right] \right\} \right\}$

In[78]:= **y[x] /. solution**

Out[78]= $\left\{ -\sqrt{\text{Sin}[x]}, \sqrt{\text{Sin}[x]} \right\}$

In[83]:= **Plot[y[x] /. solution[[1]], {x, 0, Pi}]**



In[84]:= **f[x_] = x^4 + 1**

Out[84]= $1 + x^4$

In[86]:= **f[100]**

Out[86]= 100 000 001

In[89]:= **f[x_, y_] = x^2 + y^2**

Out[89]= $x^2 + y^2$

In[91]:= **f[10, 1]**

Out[91]= 101

```
In[92]:= f[x_Integer] = x
```

```
Out[92]= X
```

```
In[93]:= f[10]
```

```
Out[93]= 10
```

```
In[94]:= f[10.]
```

```
Out[94]= 10 001.
```

```
In[102]:= x = RandomInteger[10]
```

```
Out[102]=
```

```
1
```

```
In[96]:= If[PrimeQ[x],  
Print["x is prime"],  
Print["x is not prime"]  
]
```

```
x is not prime
```

```
In[104]:= Which[  
Mod[x, 3] == 0, Print["x is 0 mod 3"],  
Mod[x, 3] == 1, Print["x is 1 mod 3"],  
True, Print["x is 2 mod 3"]  
]
```

```
x is 1 mod 3
```

```
In[120]:= f[x_] := Which[  
x < 0, -x,  
x == 0, 1,  
True, x + 1  
]
```

```
In[121]:= Plot[f[x], {x, -2, 2}]
```

```
Out[121]=
```

