Hands-on Start to Mathematica

Basic input

In[•]:=
```
627 / 3
```
Out[•]=
```
209
```

In[•]:=
```
628 / 3
```
Out[•]=
$$\frac{628}{3}$$

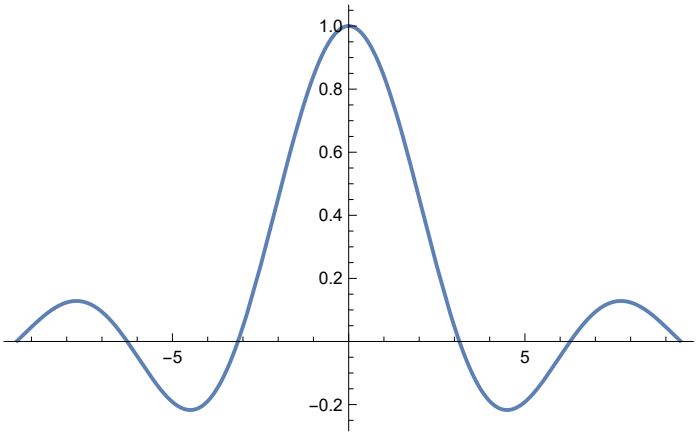
In[•]:=
$$\mathbf{N}\left[\frac{628}{3}\right]$$
Out[•]=
```
209.333
```

Free-form input

In[•]:=

graph sin(x)/x
```
Plot[Sin[x] / x, {x, -9.4, 9.4}]
```

Out[•]=



In[ ]:=

Give pi to 20 digits

```
N[Pi, 20]
```

Out[ ]=

3.1415926535897932385

In[ ]:=

Solve 2x–7=0 and 3x–2y=0 for x and y

```
Solve[{2*x - 7 == 0, 3*x - 2*y == 0}, {x, y}]
```

Out[ ]=

$$\left\{\left\{x \to \frac{7}{2},\ y \to \frac{21}{4}\right\}\right\}$$

In[ ]:=

Integral of 1/(x^3 – 1)

```
Integrate[1 / (x^3 - 1), x]
```

Out[ ]=

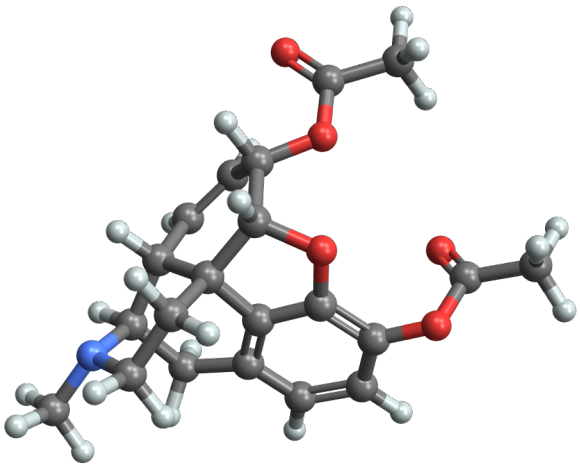
$$-\frac{\text{ArcTan}\left[\frac{1+2x}{\sqrt{3}}\right]}{\sqrt{3}} + \frac{1}{3}\text{Log}[1-x] - \frac{1}{6}\text{Log}\left[1+x+x^2\right]$$

In[ ]:=

Picture of heroin molecule

heroin CHEMICAL [*molecule plot*]

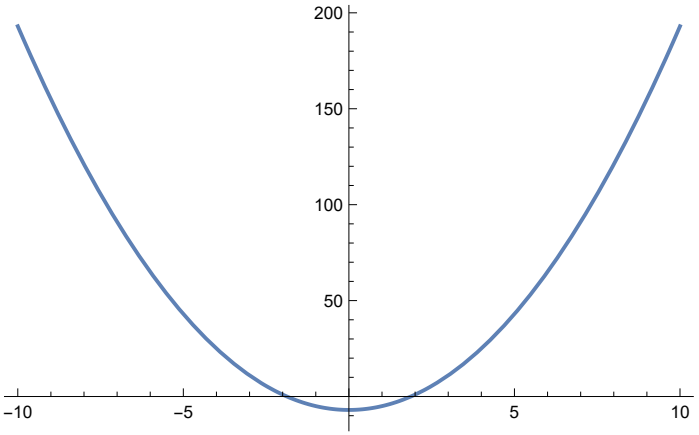
Out[ ]=



Wolfram Language input

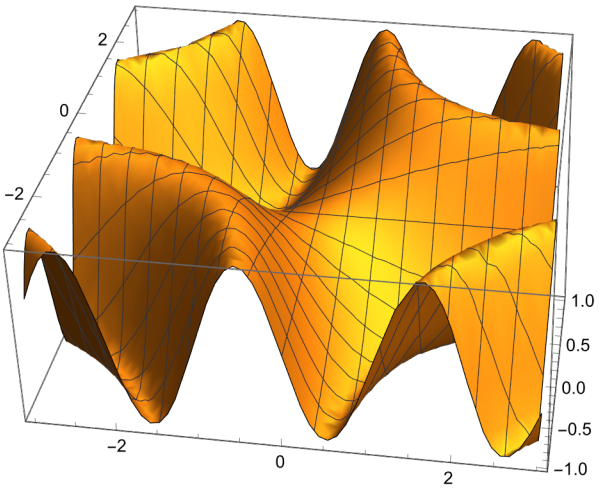
In[•]:=
```
Plot[2 x^2 - 7 , {x, -10, 10}]
```

Out[•]=



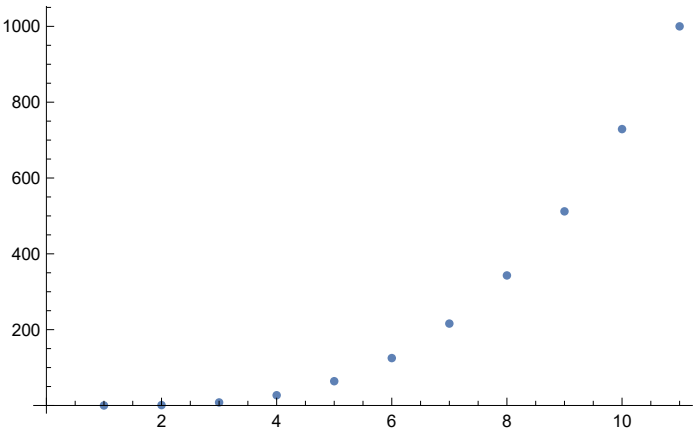
In[•]:=
```
Plot3D[Sin[x * y], {x, -3, 3}, {y, -3, 3}]
```

Out[•]=



In[•]:=
```
Table[i^3, {i, 0, 10}];
ListPlot[%]
```

Out[•]=



In[•]:=
```
mat1 = {{1, 3, -2}, {2, 5, 0}, {-3, -5, 7}};
Det[mat1]
```

Out[•]=
```
-17
```

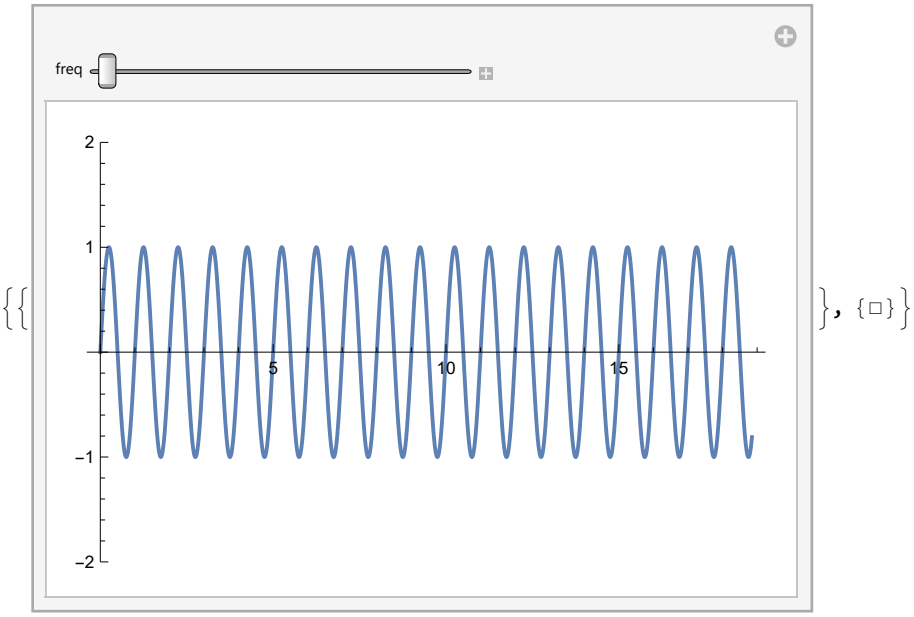
In[•]:=
```
Clear[mat1]
```

Capital letters to start all function names.
Function arguments are enclosed by square brackets.
Lists are enclosed by curly braces.
Shift + Enter to do a calculation

Applying what we've learned

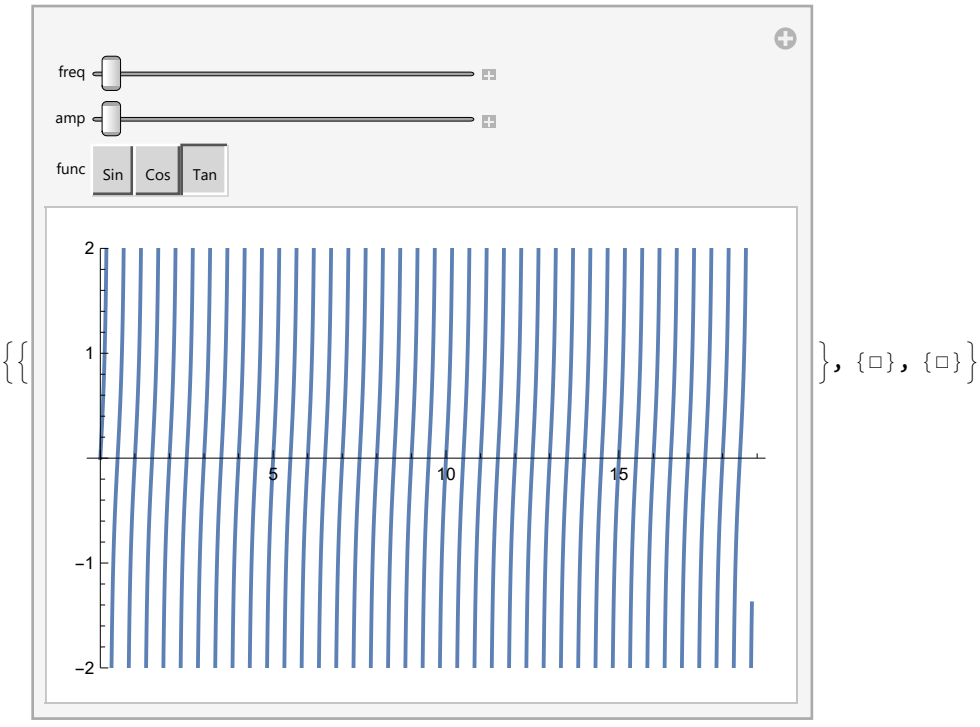
In[•]:=
```
Manipulate[Plot[Sin[2 * Pi * freq * x], {x, 0, 6 * Pi}, PlotRange → {-2, 2}], {freq, 1, 5}]
```

Out[•]=



In[•]:=
```
Manipulate[Plot[amp * func[2 * Pi * freq * x], {x, 0, 6 * Pi}, PlotRange → {-2, 2}], {freq,
```

Out[•]=



Documentation and saving

```
Plot[Sin[2 x], {x, 0, 6 Pi}]
```

Out[•]=