In[1]:=
```
Limit[{Sin[x]/x}, x → 0]
```
Out[1]= {1}

In[5]:=
```
Limit[{(x^3 - 4 * x - 15)/(x - 3)}, x → 3]
```
Out[5]= {23}

In[6]:=
```
Limit[{(x^3 - 5 * x)/(2 * x^3 - 3 * x^2)}, x → ∞]
```
Out[6]= $\left\{\frac{1}{2}\right\}$

In[7]:=
```
D[{x^x}, {x, 1}]
```
Out[7]= $\{x^x\ (1 + \text{Log}[x])\}$

In[8]:=
```
D[{x^x}, {x, 2}]
```
Out[8]= $\left\{x^{-1+x} + x^x\ (1 + \text{Log}[x])^2\right\}$

In[9]:=
```
D[{x^x}, {x, 3}]
```
Out[9]= $\left\{2\,x^{-1+x}\ (1 + \text{Log}[x]) + x^x\ (1 + \text{Log}[x])^3 + x^{-1+x}\left(\frac{-1+x}{x} + \text{Log}[x]\right)\right\}$

In[10]:=
```
D[{5 * x^5 + 4 * x^4 + 9 * x^3 - 16 * x^2 + 7 * x + 2}, {x, 1}]
```
Out[10]= $\left\{7 - 32\,x + 27\,x^2 + 16\,x^3 + 25\,x^4\right\}$

In[11]:=
```
D[{5 * x^5 + 4 * x^4 + 9 * x^3 - 16 * x^2 + 7 * x + 2}, {x, 2}]
```
Out[11]= $\left\{-32 + 54\,x + 48\,x^2 + 100\,x^3\right\}$

In[12]:=
```
D[{5 * x^5 + 4 * x^4 + 9 * x^3 - 16 * x^2 + 7 * x + 2}, {x, 3}]
```
Out[12]= $\left\{54 + 96\,x + 300\,x^2\right\}$

In[13]:=
```
D[{Sin[x * y]}, {x, 2}, {y, 3}]
```
Out[13]= $\left\{-6\,x\,\text{Cos}[x\,y] + x^3\,y^2\,\text{Cos}[x\,y] + 6\,x^2\,y\,\text{Sin}[x\,y]\right\}$

In[14]:=
```
Integrate[{Sin[a * x + b]}, x]
```
Out[14]= $\left\{-\frac{\text{Cos}[b]\,\text{Cos}[a\,x]}{a} + \frac{\text{Sin}[b]\,\text{Sin}[a\,x]}{a}\right\}$

In[15]:=
```
Integrate[{(Log[x])^3}, x]
```
Out[15]= $\left\{-6\,x + 6\,x\,\text{Log}[x] - 3\,x\,\text{Log}[x]^2 + x\,\text{Log}[x]^3\right\}$

In[16]:=
```
Integrate[(Log[x])^3, x]
```
Out[16]= $-6\,x + 6\,x\,\text{Log}[x] - 3\,x\,\text{Log}[x]^2 + x\,\text{Log}[x]^3$

In[19]:=
```
Integrate[{E^-x}, {x, 0, a}]
```

Out[19]= $\{1 - e^{-a}\}$

In[18]:=
```
Integrate[{Sin[x]}, {x, 0, Pi / 2}]
```

Out[18]= $\{1\}$

In[20]:=
```
Series[{Log[x]}, {x, Pi/2, 8}]
```

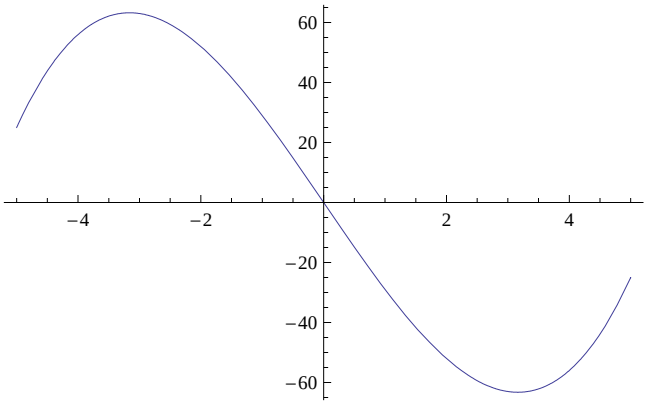
Out[20]= $\left\{\text{Log}\left[\frac{\pi}{2}\right] + \frac{2\left(x - \frac{\pi}{2}\right)}{\pi} - \frac{2\left(x - \frac{\pi}{2}\right)^2}{\pi^2} + \frac{8\left(x - \frac{\pi}{2}\right)^3}{3\,\pi^3} - \frac{4\left(x - \frac{\pi}{2}\right)^4}{\pi^4} + \frac{32\left(x - \frac{\pi}{2}\right)^5}{5\,\pi^5} - \frac{32\left(x - \frac{\pi}{2}\right)^6}{3\,\pi^6} + \frac{128\left(x - \frac{\pi}{2}\right)^7}{7\,\pi^7} - \frac{32\left(x - \frac{\pi}{2}\right)^8}{\pi^8} + 0\left[x - \frac{\pi}{2}\right]^9\right\}$

In[21]:=
```
Series[{Sin[x]}, {x, Pi/2, 8}]
```

Out[21]= $\left\{1 - \frac{1}{2}\left(x - \frac{\pi}{2}\right)^2 + \frac{1}{24}\left(x - \frac{\pi}{2}\right)^4 - \frac{1}{720}\left(x - \frac{\pi}{2}\right)^6 + \frac{\left(x - \frac{\pi}{2}\right)^8}{40\,320} + 0\left[x - \frac{\pi}{2}\right]^9\right\}$

In[22]:=
```
Plot[{x^3 - 30 * x}, {x, -5, 5}]
```

Out[22]=



In[23]:=
```
FindMaximum[{x^3 - 30 * x}, {x, -2}]
```

Out[23]= $\{63.2456, \{x \to -3.16228\}\}$

In[24]:=
```
FindMinimum[{x^3 - 30 * x}, {x, 2}]
```

Out[24]= $\{-63.2456, \{x \to 3.16228\}\}$