In[1]:=
```
pot[q_, x0_, y0_, z0_] := q / (4 * Pi * eps * Sqrt[(x - x0)^2 + (y - y0)^2 + (z - z0)^2]);
(*compute and plot potential due to 2C charge placed at (0,0,0)*)
q = -2; x1 = 0; y1 = 0; z1 = 0; eps = 1;
monopot = pot[q, x1, y1, z1] /. {z → 0}
```

Out[3]=
$$-\frac{1}{2\,\pi\,\sqrt{x^2+y^2}}$$

In[11]:=
```
(*x plan along x-axis? Plot3D*)
monopot = pot[q, x1, y1, z1] /. {y → 0, z → 0}
```

Out[11]=
$$-\frac{1}{2\,\pi\,\sqrt{x^2}}$$

In[6]:=
```
? Plot
```

Out[6]=

Symbol

Plot[f, {x, x_{min}, x_{max}}] generates a plot of f as a function of x from x_{min} to x_{max}.

Plot[{f_1, f_2, …}, {x, x_{min}, x_{max}}] plots several functions f_i.

Plot[{…, w[f_i], …}, …] plots f_i with features defined by the symbolic wrapper w.

Plot[…, {x} ∈ reg] takes the variable x to be in the geometric region reg.

In[8]:=
```
? PlotRange
```

Out[8]=

Symbol

PlotRange is an option for graphics functions that specifies what range of coordinates to include in a plot.

In[9]:=
```
? PlotPoints
```

Out[9]=

Symbol

PlotPoints is an option for plotting functions that specifies how many initial sample points to use.

In[12]:= `? Plot3D`

Out[12]=

Symbol

Plot3D[f, {x, x_{min}, x_{max}}, {y, y_{min}, y_{max}}] generates a three–dimensional plot of f as a function of x and y.

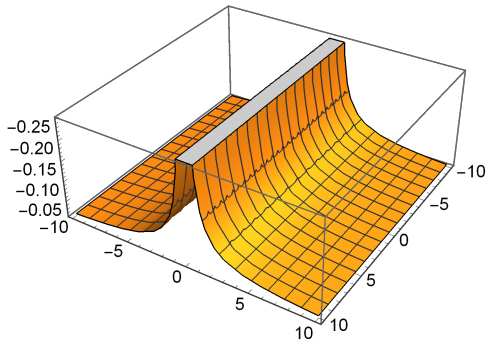
Plot3D[{f_1, f_2, …}, {x, x_{min}, x_{max}}, {y, y_{min}, y_{max}}] plots several functions.

Plot3D[{…, w[f_i], …}, …] plots f_i with features defined by the symbolic wrapper w.

Plot3D[…, {x, y} ∈ reg] takes variables {x, y} to be in the geometric region reg.

In[13]:=
```
Plot3D[monopot, {x, -10, 10}, {y, -10, 10},
 PlotRange → {{-5, 5}, {-5, 5}, {-10, 10}} PlotPoints → 100]
```

Out[13]=




```
(* at a line 2x+7 *)
```

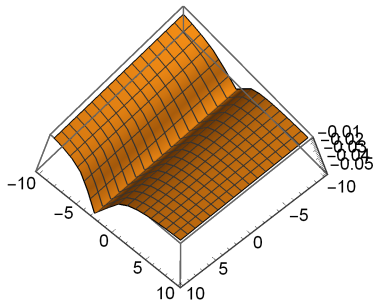
In[14]:=
```
monopot = pot[q, x1, y1, z1] /. {y → 2 x + 7, z → 0}
```

Out[14]=

$$-\frac{1}{2\,\pi\,\sqrt{x^2+\left(7+2\,x\right)^2}}$$

In[18]:=
```
Plot3D[monopot, {x, -10, 10}, {y, -10, 10},
 PlotRange → {{-5, 5}, {-5, 5}, {-10, 10}} PlotPoints → 100]
```

Out[18]=




```
(* at a circle : x^2+y^2=25 *)
```

In[19]:=
```
sol = Solve[x^2 + y^2 == 25, x]
```

Out[19]=

$$\left\{\left\{x \to -\sqrt{25-y^2}\right\},\ \left\{x \to \sqrt{25-y^2}\right\}\right\}$$

In[20]:=
```
a = x /. sol[[1]]
```

Out[20]= $-\sqrt{25 - y^2}$

In[21]:=
```
b = x /. sol[[2]]
```

Out[21]= $\sqrt{25 - y^2}$

In[22]:=
```
monopot = pot[q, x1, y1, z1]
```

Out[22]= $-\frac{1}{2\pi\sqrt{x^2 + y^2 + z^2}}$

In[23]:=
```
monopot = pot[q, x1, y1, z1] /. {y → b, z → 0}
```

Out[23]= $-\frac{1}{2\pi\sqrt{25 + x^2 - y^2}}$

In[24]:=
```
monopot = pot[q, x1, y1, z1] /. {y → a, z → 0}
```

Out[24]= $-\frac{1}{2\pi\sqrt{25 + x^2 - y^2}}$

In[25]:=
```
Plot3D[monopot, {x, -10, 10}, {y, -10, 10},
 PlotRange → {{-10, 10}, {-10, 10}, {-10, 10}} PlotPoints → 100]
```

Out[25]=