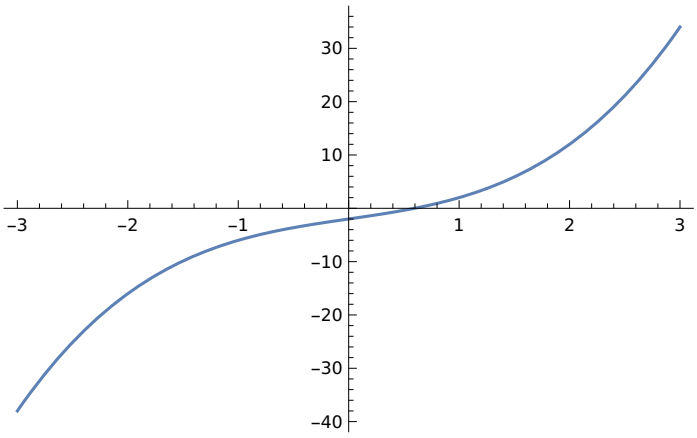
In[14]:=

```
f[x_] := x^3 + 3 x - 2
Plot[f[x], {x, -3, 3}]
```

Out[15]=




```
a[0] = 1.0;

b[0] = 0.0;

Do[

a[n + 2] =

a[n + 1] - (a[n + 1] - a[n]) / (f[a[n + 1]] - f[a[n]]) f[

a[n + 1]], {n, 0, 9}]
```

In[16]:=

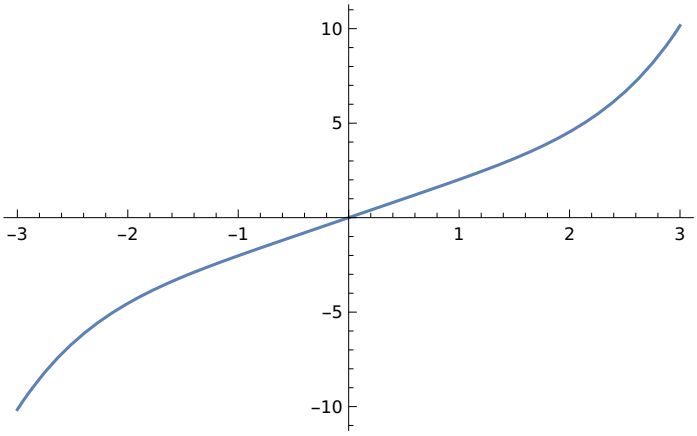
```
TableForm[Table[{n, a[n], f[a[n]]}, {n, 0, 9}]]
```

Out[16]//TableForm=

0	-1	-6
1	-1	-6
2	-1	-6
3	-1	-6
4	-1	-6
5	-1	-6
6	-1	-6
7	-1	-6
8	-1	-6
9	-1	-6

In[17]:=
```
f[x_] := Sin[x] + Sinh[x]
Plot[f[x], {x, -3, 3}]
```

Out[18]=




```
a[0] = 0.0;

b[0] = 0.0;

Do[

a[n + 2] =

a[n + 1] - (a[n + 1] - a[n]) / (f[a[n + 1]] - f[a[n]]) f[

a[n + 1]], {n, 0, 9}]
```

In[19]:=
```
TableForm[Table[{n, a[n], f[a[n]]}, {n, 0, 9}]]
```

Out[19]//TableForm=

0	-1	-Sin[1] - Sinh[1]
1	-1	-Sin[1] - Sinh[1]
2	-1	-Sin[1] - Sinh[1]
3	-1	-Sin[1] - Sinh[1]
4	-1	-Sin[1] - Sinh[1]
5	-1	-Sin[1] - Sinh[1]
6	-1	-Sin[1] - Sinh[1]
7	-1	-Sin[1] - Sinh[1]
8	-1	-Sin[1] - Sinh[1]
9	-1	-Sin[1] - Sinh[1]

In[19]:=
```
Transpose[%18]
```

Out[19]=

```
{{0, 1, 2, 3, 4, 5, 6, 7, 8, 9}, {a[0], a[1], a[2], a[3], a[4], a[5], a[6], a[7], a[8], a[9]},
 {Sin[a[0]] + Sinh[1 + a[0]], Sin[a[1]] + Sinh[1 + a[1]], Sin[a[2]] + Sinh[1 + a[2]], Sin[a[3]] + Sinh[1 + a[3]],
  Sin[a[4]] + Sinh[1 + a[4]], Sin[a[5]] + Sinh[1 + a[5]], Sin[a[6]] + Sinh[1 + a[6]],
  Sin[a[7]] + Sinh[1 + a[7]], Sin[a[8]] + Sinh[1 + a[8]], Sin[a[9]] + Sinh[1 + a[9]]}}
```

In[20]:=
```
TableForm[%19]
```

Out[20]//TableForm=

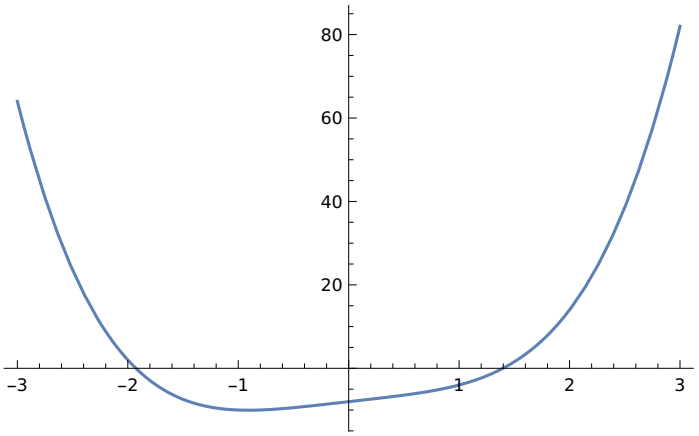
0	1	2	3
a[0]	a[1]	a[2]	a[3]
Sin[a[0]] + Sinh[1 + a[0]]	Sin[a[1]] + Sinh[1 + a[1]]	Sin[a[2]] + Sinh[1 + a[2]]	Sin[a[3]] + Sinh[1 + a[

In[21]:=
```
Flatten[%20]
```

Out[21]=
```
{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, a[0], a[1], a[2], a[3], a[4], a[5], a[6], a[7], a[8],
 a[9], Sin[a[0]] + Sinh[1 + a[0]], Sin[a[1]] + Sinh[1 + a[1]], Sin[a[2]] + Sinh[1 + a[2]],
 Sin[a[3]] + Sinh[1 + a[3]], Sin[a[4]] + Sinh[1 + a[4]], Sin[a[5]] + Sinh[1 + a[5]],
 Sin[a[6]] + Sinh[1 + a[6]], Sin[a[7]] + Sinh[1 + a[7]], Sin[a[8]] + Sinh[1 + a[8]], Sin[a[9]] + Sinh[1 + a[9]]}
```

In[38]:=
```
f[x_] := x^4 + 3 x - 8
Plot[f[x], {x, -3, 3}]
```

Out[39]=




```
a[0] = -2.0;

b[0] = 1.0;

Do[

a[n + 2] =

a[n + 1] - (a[n + 1] - a[n]) / (f[a[n + 1]] - f[a[n]]) f[

a[n + 1]], {n, 0, 9}]
```

In[40]:=
```
TableForm[Table[{n, a[n], f[a[n]]}, {n, 0, 9}]]
```

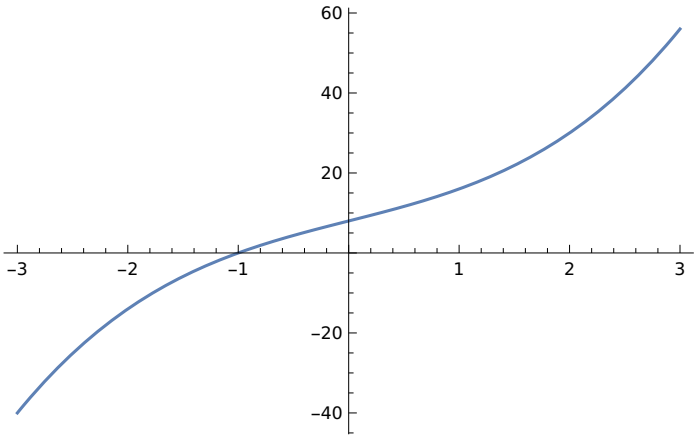
Out[40]//TableForm=

0	-1	-10
1	-1	-10
2	-1	-10
3	-1	-10
4	-1	-10
5	-1	-10
6	-1	-10
7	-1	-10
8	-1	-10
9	-1	-10

```
(*Newton Raphson *)
```

In[29]:=
```
f[x_] := x^3 + 7 x + 8
Plot[f[x], {x, -3, 3}]
```

Out[30]=




```
a[0] = 0.0;
b[0] = -1.0;
Do[a[n + 1] = a[n] - (f[a[n]] / f'[a[n]]), {n, 0, 9}]
```

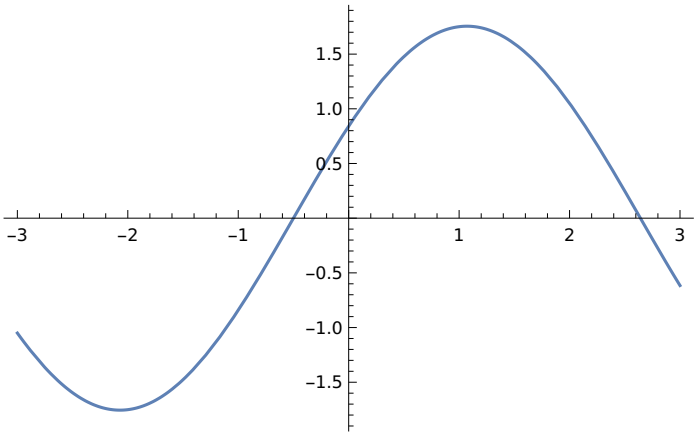
In[31]:=
```
TableForm[Table[{n, a[n], f[a[n]]}, {n, 0, 9}]]
```

Out[31]//TableForm=

0	a[0]	$8 + 7\,a[0] + a[0]^3$
1	a[1]	$8 + 7\,a[1] + a[1]^3$
2	a[2]	$8 + 7\,a[2] + a[2]^3$
3	a[3]	$8 + 7\,a[3] + a[3]^3$
4	a[4]	$8 + 7\,a[4] + a[4]^3$
5	a[5]	$8 + 7\,a[5] + a[5]^3$
6	a[6]	$8 + 7\,a[6] + a[6]^3$
7	a[7]	$8 + 7\,a[7] + a[7]^3$
8	a[8]	$8 + 7\,a[8] + a[8]^3$
9	a[9]	$8 + 7\,a[9] + a[9]^3$

In[43]:=
```
f[x_] := Sin[x] + Sin[x + 1]
Plot[f[x], {x, -3, 3}]
```

Out[44]=




```
a[0] = -1;

Do[a[n + 1] = a[n] - (f[a[n]] / f'[a[n]]), {n, 0, 9}]
```

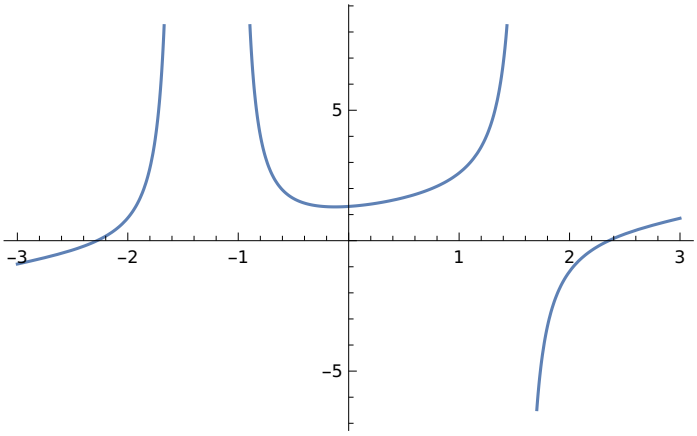
In[45]:=
```
TableForm[Table[{n, a[n], f[a[n]]}, {n, 0, 9}]]
```

Out[45]//TableForm=

0	a[0]	Sin[a[0]] + Sin[1 + a[0]]
1	a[1]	Sin[a[1]] + Sin[1 + a[1]]
2	a[2]	Sin[a[2]] + Sin[1 + a[2]]
3	a[3]	Sin[a[3]] + Sin[1 + a[3]]
4	a[4]	Sin[a[4]] + Sin[1 + a[4]]
5	a[5]	Sin[a[5]] + Sin[1 + a[5]]
6	a[6]	Sin[a[6]] + Sin[1 + a[6]]
7	a[7]	Sin[a[7]] + Sin[1 + a[7]]
8	a[8]	Sin[a[8]] + Sin[1 + a[8]]
9	a[9]	Sin[a[9]] + Sin[1 + a[9]]

In[35]:=
```
f[x_] := Tan[x] + Coth[x + 1]
Plot[f[x], {x, -3, 3}]
```

Out[36]=




```
a[0] = 2.0;
b[0] = 3.0;
Do[a[n + 1] = a[n] - (f[a[n]] / f'[a[n]]), {n, 0, 9}]
```

In[38]:=
```
TableForm[Table[{n, a[n], f[a[n]]}, {n, 0, 9}]]
```

Out[38]//TableForm=

0	a[0]	Coth[1 + a[0]] + Tan[a[0]]
1	a[1]	Coth[1 + a[1]] + Tan[a[1]]
2	a[2]	Coth[1 + a[2]] + Tan[a[2]]
3	a[3]	Coth[1 + a[3]] + Tan[a[3]]
4	a[4]	Coth[1 + a[4]] + Tan[a[4]]
5	a[5]	Coth[1 + a[5]] + Tan[a[5]]
6	a[6]	Coth[1 + a[6]] + Tan[a[6]]
7	a[7]	Coth[1 + a[7]] + Tan[a[7]]
8	a[8]	Coth[1 + a[8]] + Tan[a[8]]
9	a[9]	Coth[1 + a[9]] + Tan[a[9]]

In[39]:=
```
Last[%38]
```

Out[39]=

```
{9, a[9], Coth[1 + a[9]] + Tan[a[9]]}
```