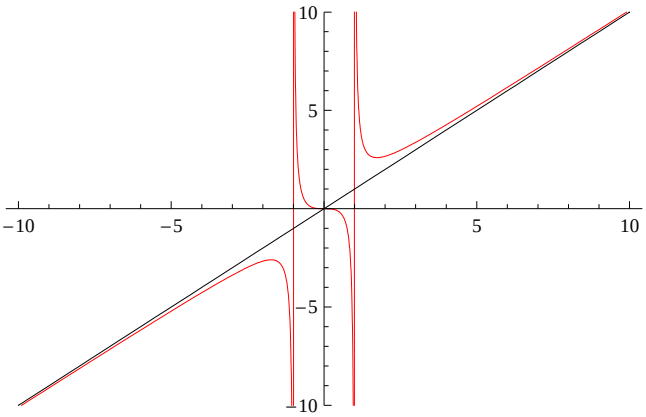
```
f[x_] = x^3 / (x^2 - 1)
```

$$\frac{x^3}{-1 + x^2}$$

$$\frac{x^3}{1 - x^2}$$

```
Plot[{f[x], x}, {x, -10, 10},
 PlotStyle → {RGBColor[1, 0, 0], RGBColor[0, 0, 0]}, PlotRange → {-10, 10}]
```




```
Solve[x^2 - 1 == 0, x]
```

```
{{x → -1}, {x → 1}}
```

```
Limit[f[x], x → 1, Direction → 2]
```

```
-∞
```

```
Limit[f[x], x → 1, Direction → -2]
```

```
∞
```

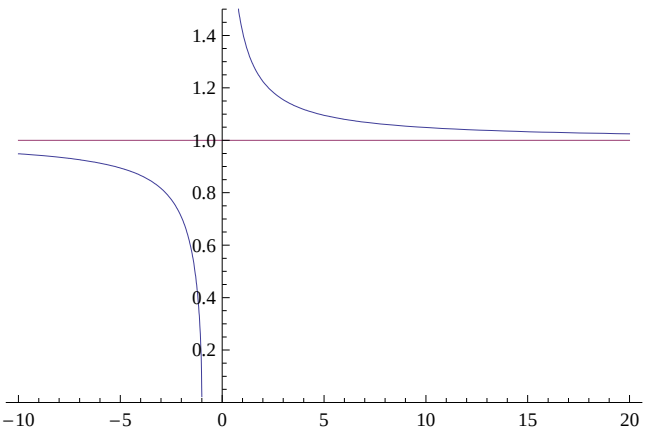
```
g[x_] = Sqrt[1 + 1 / x]
```

$$\sqrt{1 + \frac{1}{x}}$$

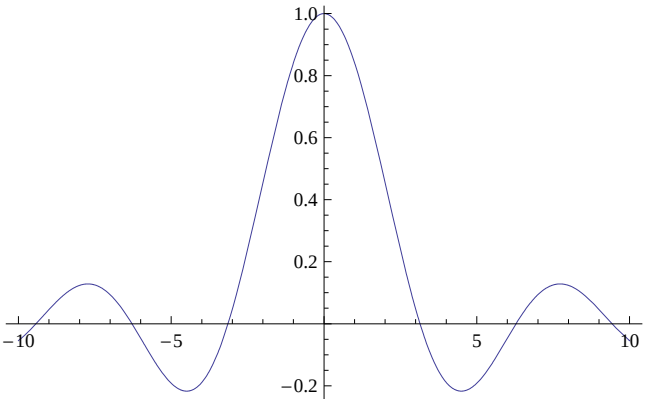
```
Limit[g[x], x → -Infinity]
```

```
1
```

```
Plot[{g[x], 1}, {x, -10, 20}, PlotRange → {0, 1.5}]
```



```
Plot[Sin[x] / x, {x, -10, 10}]
```




```
Limit[Exp[x], x → Infinity]
```

∞

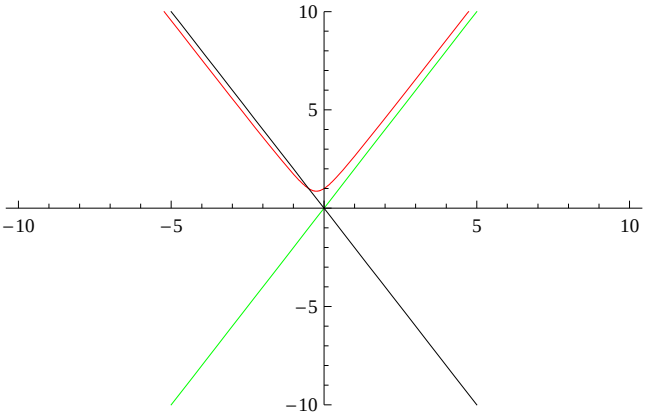
```
Limit[Exp[x], x → -Infinity]
```

0

```
Solve[Sqrt[4 x^2 + 2 x + 1] == 0, x]
```

$$\left\{\left\{x \to \frac{1}{4}\left(-1 - i\sqrt{3}\right)\right\}, \left\{x \to \frac{1}{4}\left(-1 + i\sqrt{3}\right)\right\}\right\}$$

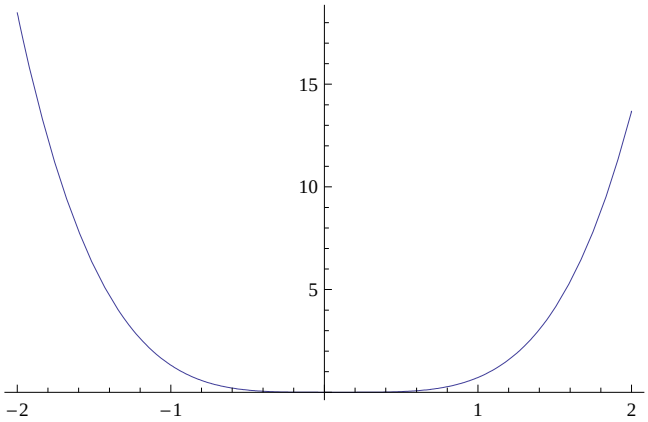
```
Plot[{Sqrt[4 x^2 + 2 x + 1], 2 x, -2 x}, {x, -10, 10}, PlotRange → {-10, 10},
 PlotStyle → {RGBColor[1, 0, 0], RGBColor[0, 1, 0], RGBColor[0, 0, 0]}]
```



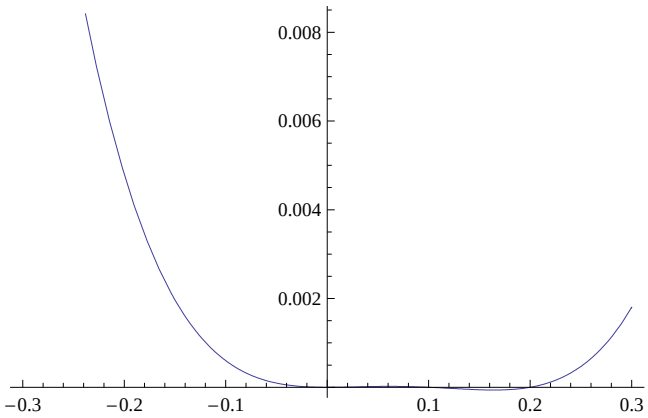

```
h[x_] = x^2 (x - 0.1) (x - 0.2)
```

$(-0.2 + x)\ (-0.1 + x)\ x^2$

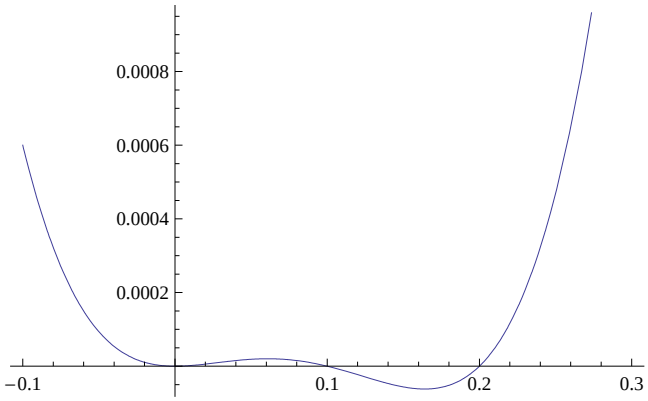
```
Plot[h[x], {x, -2, 2}]
```



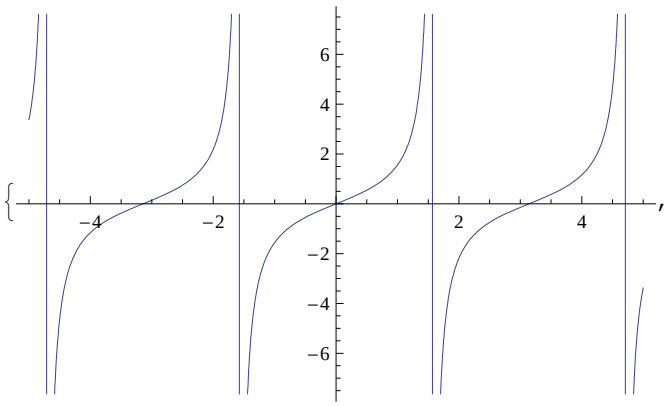

```
Plot[h[x], {x, -0.3, 0.3}]
```

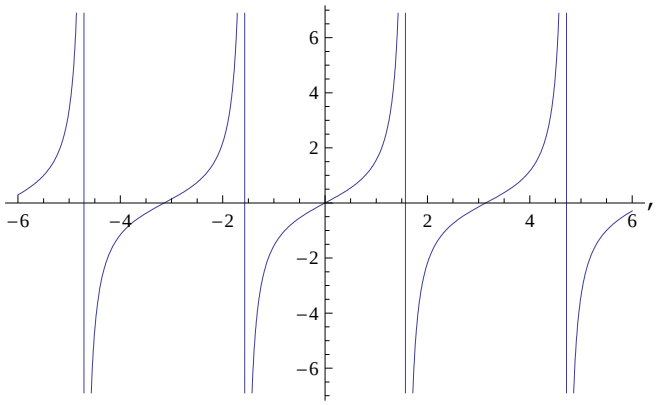


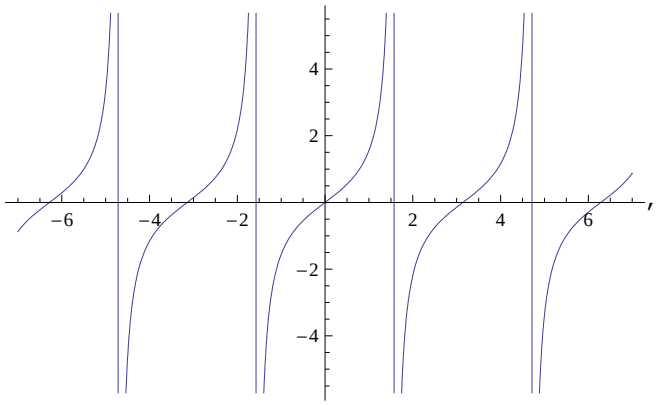

```
Plot[h[x], {x, -0.1, 0.3}]
```

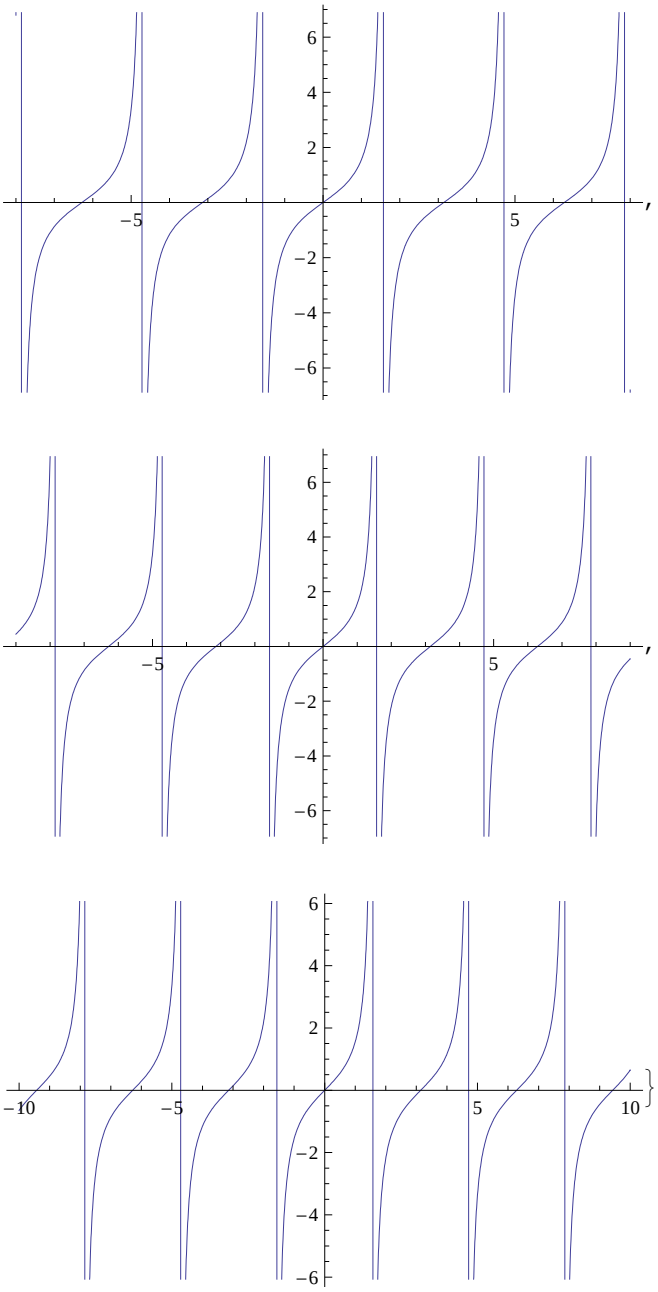



```
Table[Plot[Tan[x], {x, -a, a}], {a, 5, 10, 1}]
```

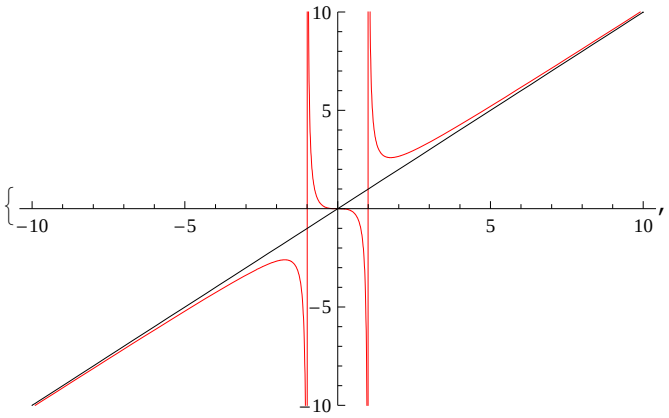

6
4
2
−4
−2
2
4
−2
−4
−6

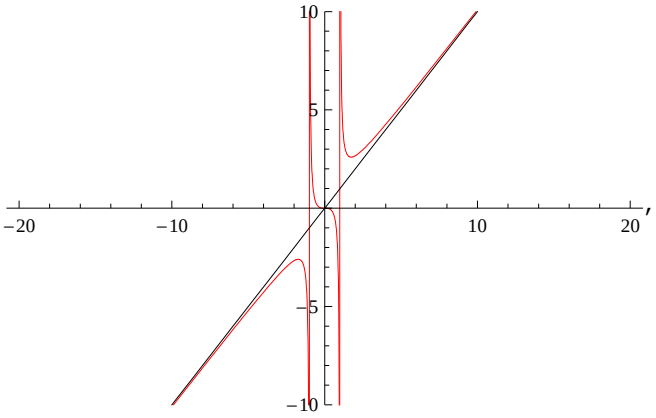

6
4
2
−6
−4
−2
2
4
6
−2
−4
−6

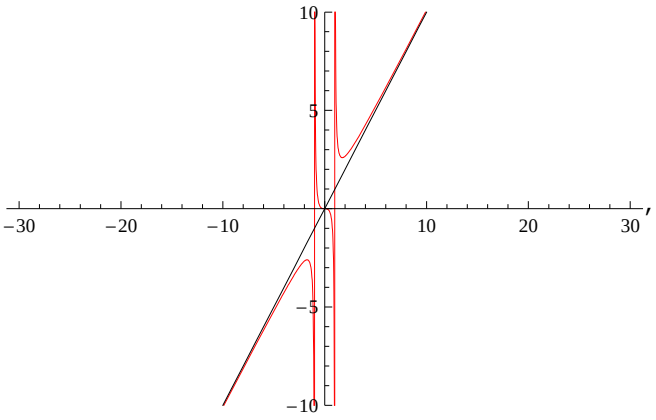

4
2
−6
−4
−2
2
4
6
−2
−4

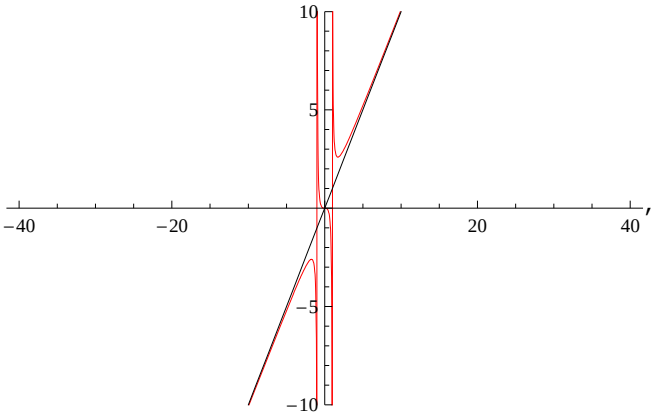


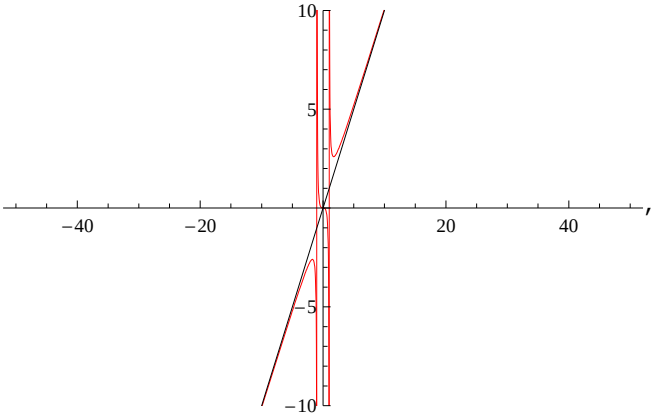

```
Table[Plot[{f[x], x}, {x, -a, a}, PlotStyle → {RGBColor[1, 0, 0], RGBColor[0, 0, 0]},
  PlotRange → {-10, 10}], {a, 10, 100, 10}]
```

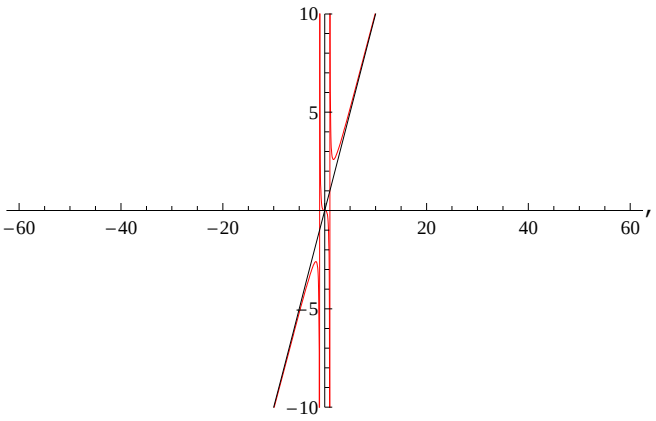

10
5
−10
−5
5
10
−5
−10

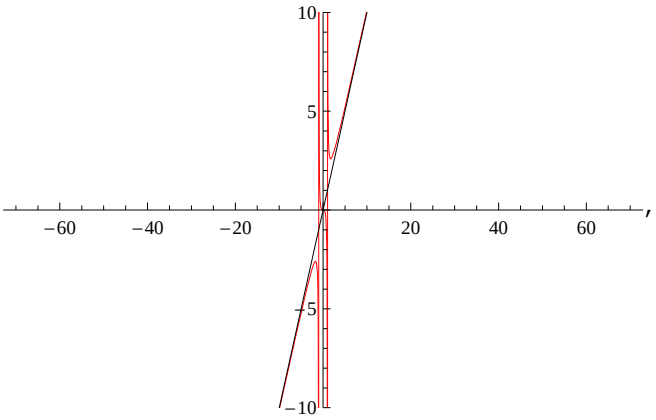

10
5
−20
−10
10
20
−5
−10

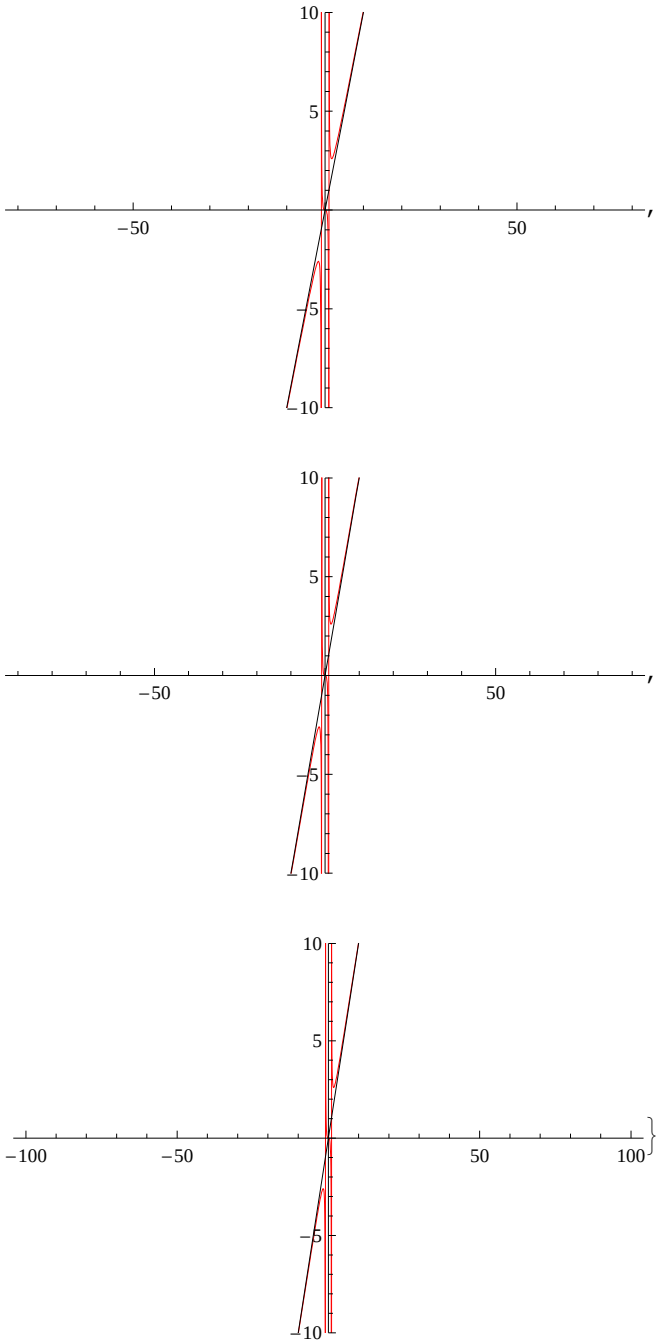

10
5
−30
−20
−10
10
20
30
−5
−10


10
5
−40
−20
20
40
−5
−10

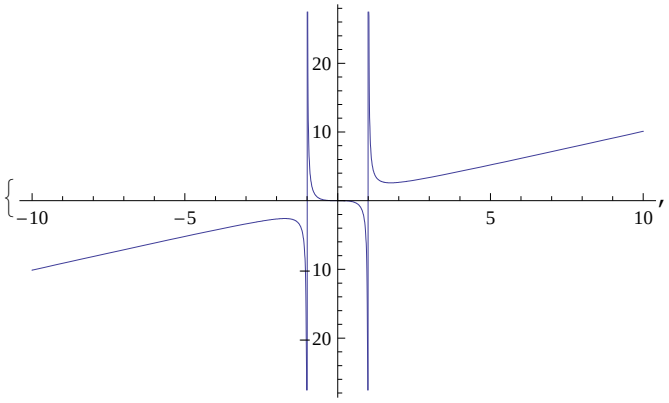

10
5
−40
−20
20
40
−5
−10

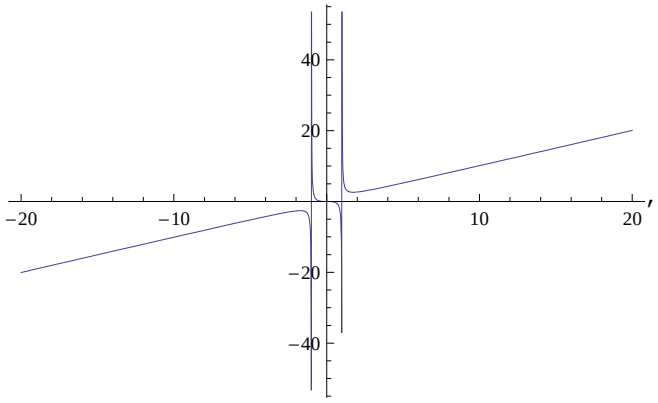

10
5
−60
−40
−20
20
40
60
−5
−10

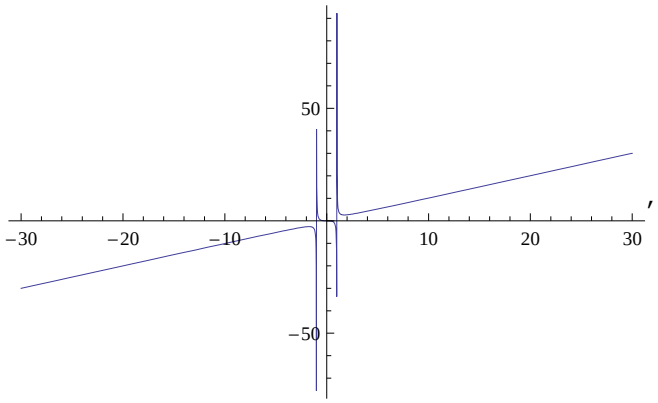

10
5
−60
−40
−20
20
40
60
−5
−10

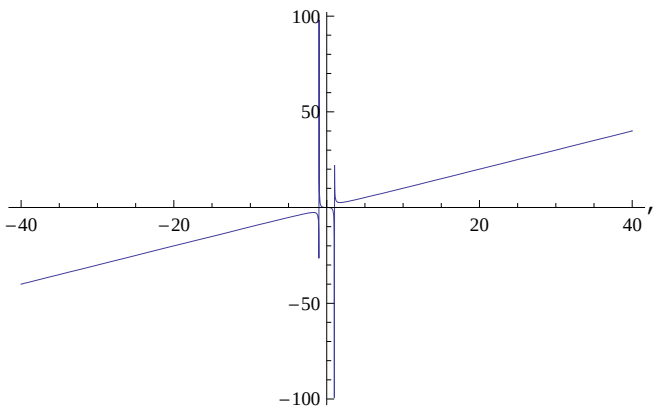


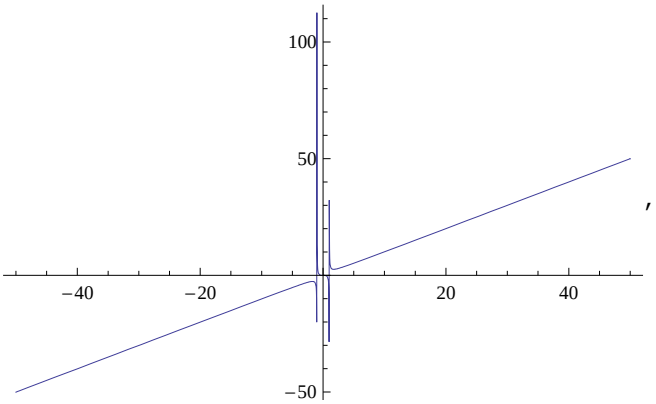

```
Table[Plot[f[x], {x, -a, a}], {a, 10, 100, 10}]
```


20
10
−10
−5
5
10
−10
−20

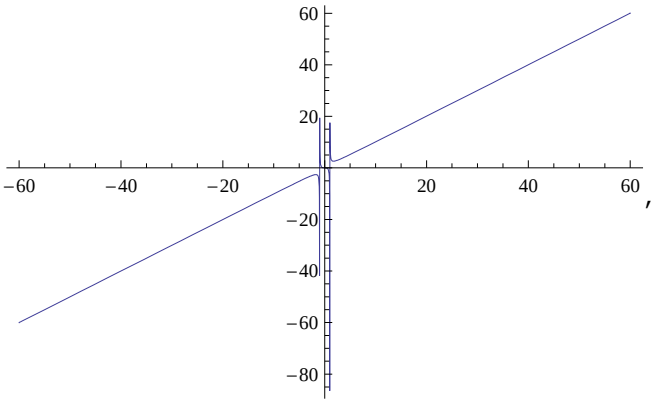

40
20
−20
−10
10
20
−20
−40


50
−30
−20
−10
10
20
30
−50

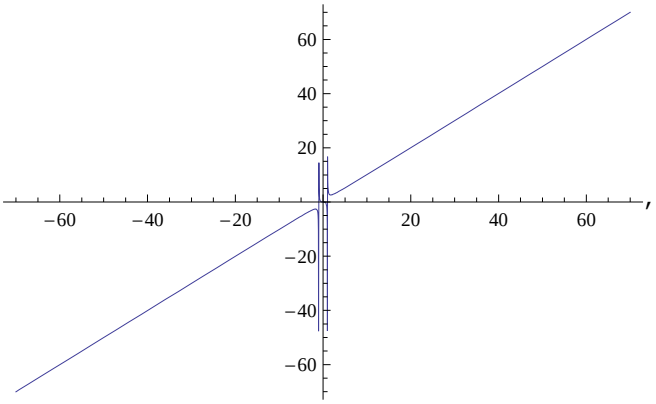

100
50
−40
−20
20
40
−50
−100


100
50
−40
−20
20
40
−50

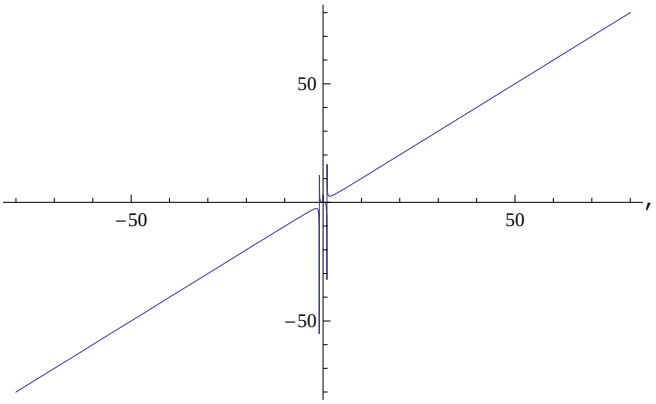
,


60
40
20
−60
−40
−20
20
40
60
−20
−40
−60
−80

,


60
40
20
−60
−40
−20
20
40
60
−20
−40
−60

,



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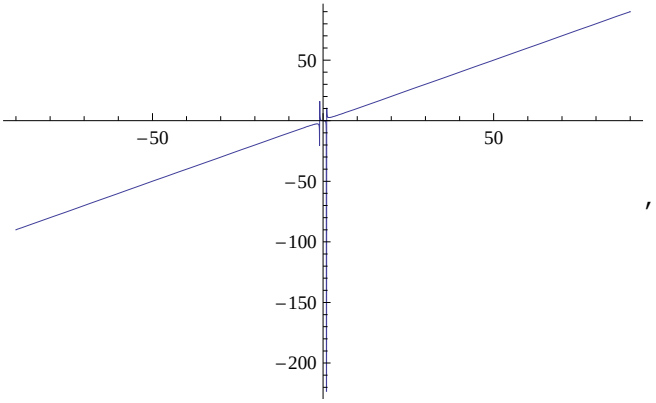

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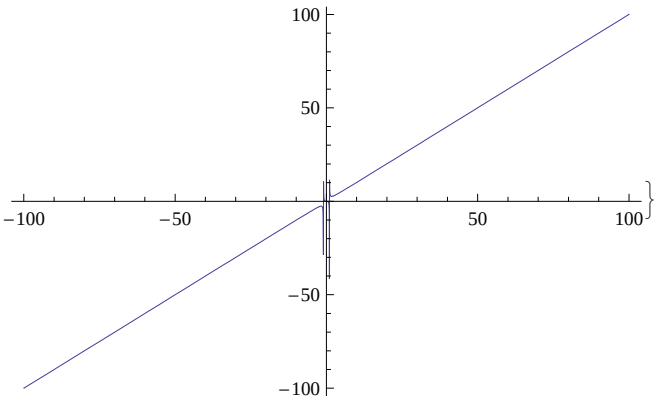
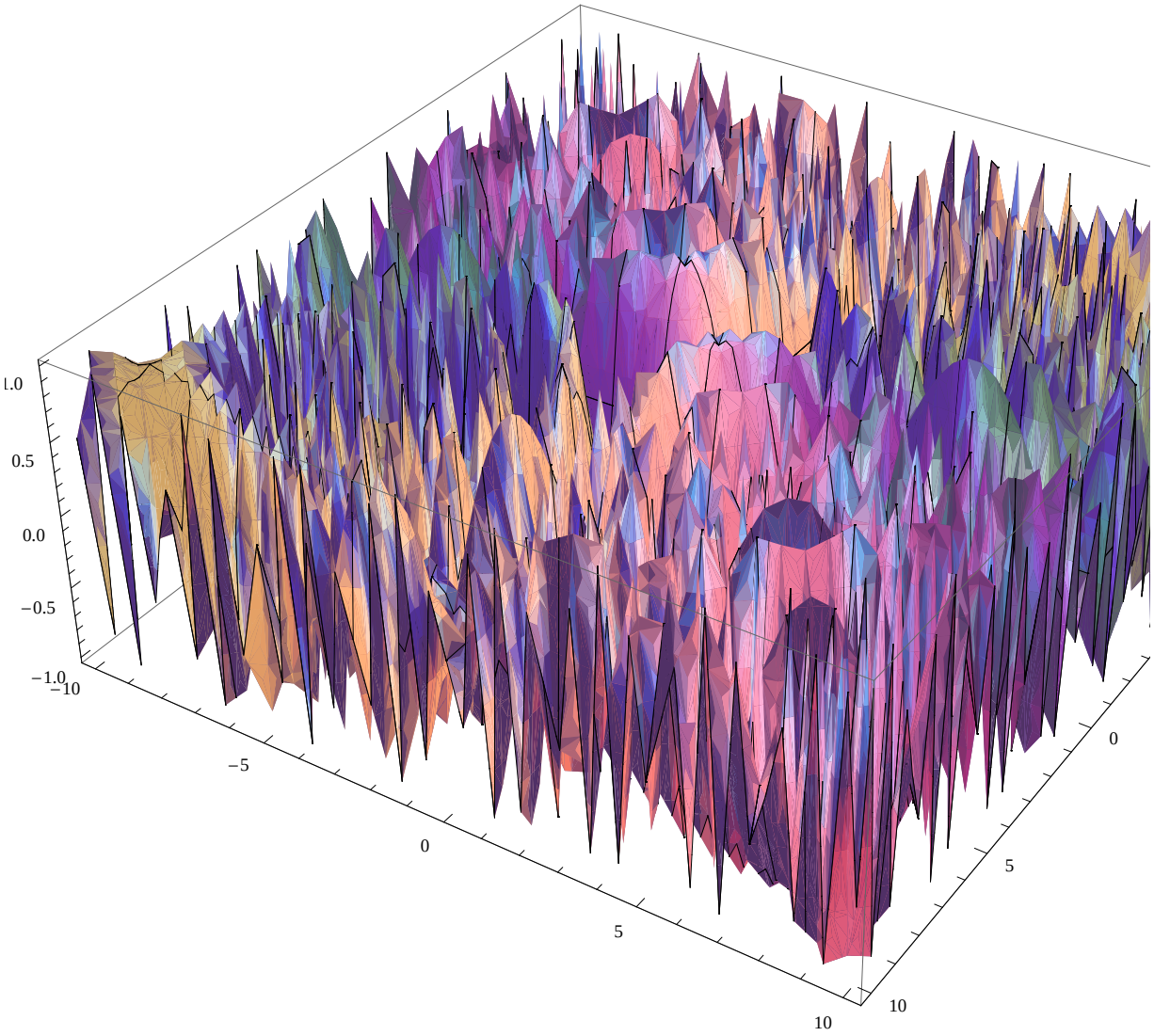



```
Plot3D[Sin[x * y], {x, -10, 10}, {y, -10, 10}]
```


1.0
0.5
0.0
−0.5
−1.0
−10
−5
0
5
10
0
5
10

```
Table[ParametricPlot[{a * Cos[x], Sin[x]}, {x, 0, 2 * Pi}], {a, 1, 5}]
```