```
Exit[]
```

Alternative utility-function

```
k =.; γ = .01; μ = 0; S0 = 55; σ = .25;
f[k_, x_] := x - Sqrt[k + x^2]
put[W_] := Max[0, 50 - W]
xx[B_, t_] := S0 Exp[ σ Sqrt[t] B + (μ - σ^2 / 2) t];
g[a_, t_] := NIntegrate[f[-put[xx[B, t]] + a (xx[B, t] - S0)] pr[B], {B, -∞, ∞}]
```

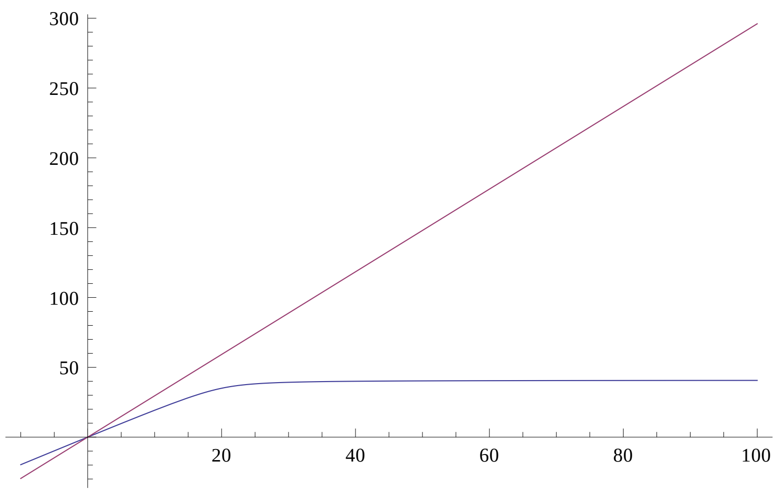
```
Plot[{g[a, 1], g[a, 0.5]}, {a, -.5, .1}]
```

$Aborted

```
y =.; k =.; Simplify[Expand[(f[k, y + x] - f[k, y])^2]]
```

$$2\left(k + x^2 + x\,y + y^2 + x\sqrt{k + y^2} - x\sqrt{k + (x + y)^2} - \sqrt{k + y^2}\,\sqrt{k + (x + y)^2}\right)$$

```
k = 34; y = -20; Plot[{f[k, y + x] - f[k, y], (2 + Abs[y / Sqrt[k + y^2]]) x}, {x, -10, 100}]
```

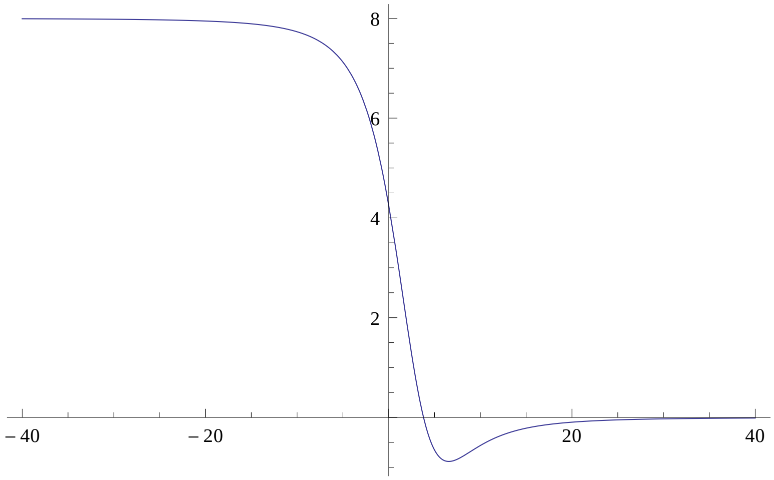



```
y =.; k =.; Simplify[D[f[k, w + x], x]]
```

$$1 - \frac{w + x}{\sqrt{k + (w + x)^2}}$$

```
k = 34; y = -3; Plot[
 -(2 (k (3 x + 2 y + Sqrt[k + y^2] - 2 Sqrt[k + (x + y)^2]) - 2 (x + y)^2 (-x - y + Sqrt[k + (x + y)^2])))/
   (k + (x + y)^2)^(3/2), {x, -40, 40}, PlotRange -> All]
```

$$-\left(2\left(k\left(3x+2y+\sqrt{k+y^2}-2\sqrt{k+(x+y)^2}\right)-2(x+y)^2\left(-x-y+\sqrt{k+(x+y)^2}\right)\right)\right)\Big/\left(k+(x+y)^2\right)^{3/2}$$

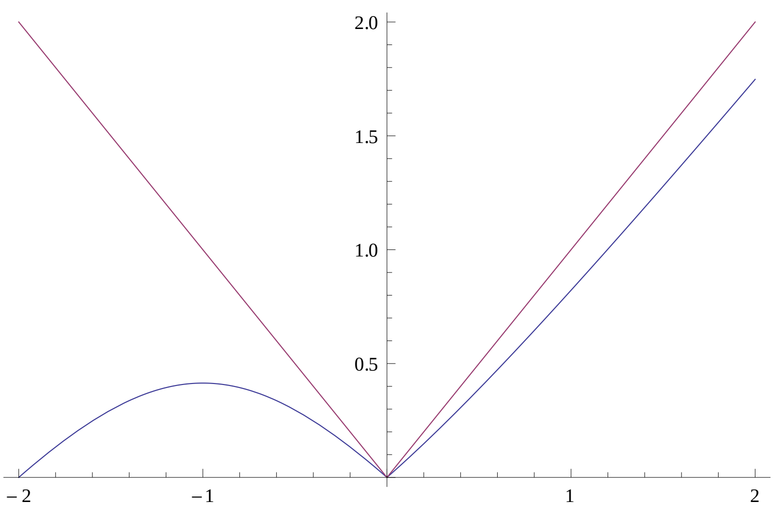



```
Limit[1 - (x + y)/Sqrt[k + (x + y)^2], {x -> -∞}]
```

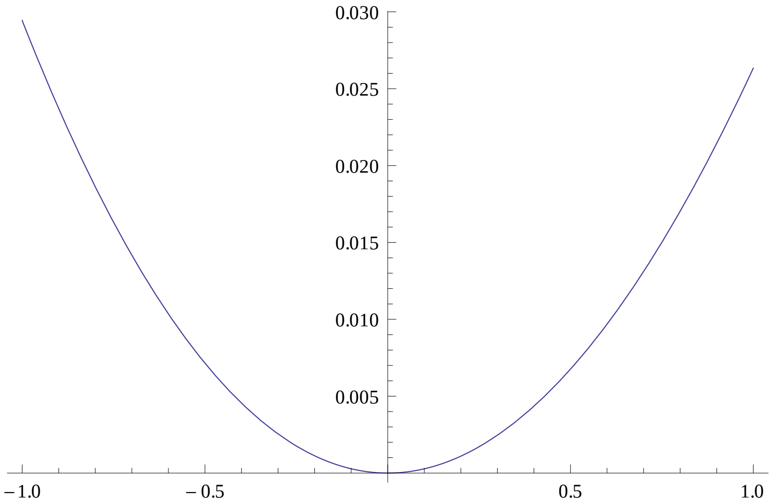
$$\text{Limit}\left[1-\frac{x+y}{\sqrt{k+(x+y)^2}},\ \{x\to-\infty\}\right]$$

{2}

```
a = 1; Plot[{(Abs[Sqrt[1 + (1 + x)^2] - Sqrt[2]]), Abs[x]}, {x, -2, 2}]
```



```
Plot[{f[x, 3]^2}, {x, -1, 1}]
```




```
Limit[f[x], {x → ∞}]
```

{1}

```
k =.
```

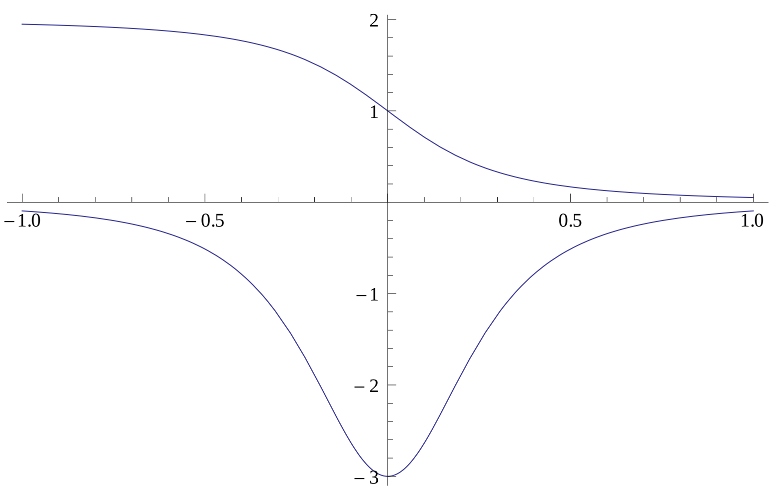
```
Simplify[D[f[k, x], {x, 1}]]
```

$$1 - \frac{x}{\sqrt{k + x^2}}$$

$$\text{Limit}\left[1 - \frac{x}{\sqrt{k + x^2}}, \{x \to -\infty\}\right]$$

{2}

$$\text{Plot}\left[\left\{1 - \frac{k\,x}{\sqrt{1 + k^2\,x^2}}, -\frac{k}{\left(1 + k^2\,x^2\right)^{3/2}}\right\} /.\ k \to 3, \{x, -1, 1\}\right]$$



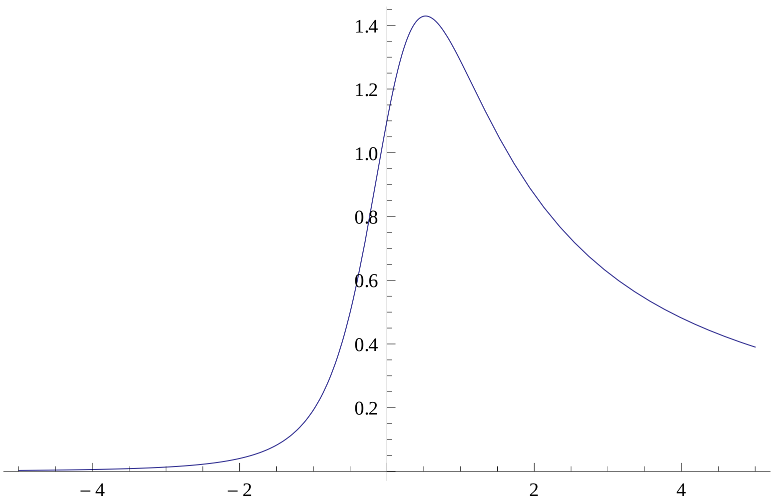
```
Simplify[D[f[k, x], {x, 2}]]

-Simplify[D[f[k, x], {x, 2}] / D[f[k, x], x]]
```

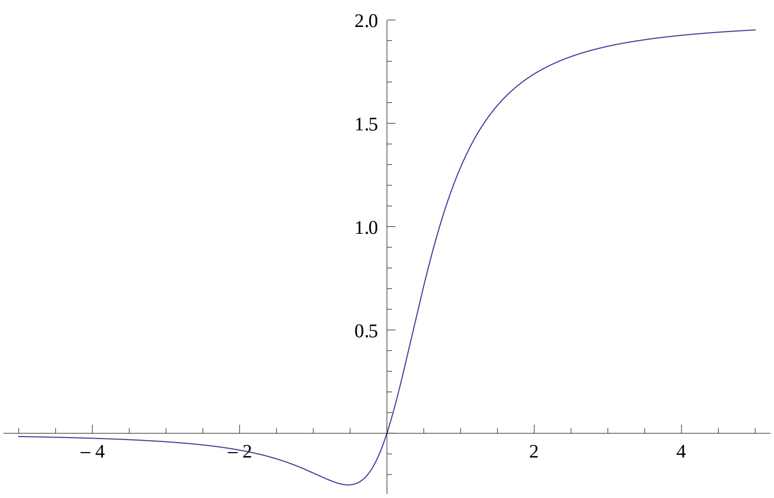
$$\frac{k\left(k\,x+\sqrt{1+k^2\,x^2}\right)}{1+k^2\,x^2}$$

$$g[k\_,\, x\_] := \frac{k\left(k\,x+\sqrt{1+k^2\,x^2}\right)}{1+k^2\,x^2}$$

```
Plot[g[1.1, x], {x, -5, 5}]
```




```
Plot[x g[1.1, x], {x, -5, 5}]
```



lässt sich approximiern