```
Exit[]

PrependTo[$Path, "/home/data/promotion/Mathematica/Packages"]; << JoFin`

$Assumptions = Fold[And, True,
   {σ > 0, a ∈ Reals, 1 > k1 ≥ 0, k0 ≥ 0, S0 > 0, K > 0, r ≥ 0, b ∈ Reals, rf ≥ 0, ɣ > 0}];

σ = .6; T = .1; r = 0; μ = -.41;
ɣ = -.001 Exp[- r]; h = -2 / 3;
t = σ √T ; mpr = (μ - r) / σ^2 ;

xx[W_, mpr_, t_] := Exp[ t W + (mpr - 1 / 2) t^2];
put[k_, t_] := BlackScholesPut[4, k, 1, 0, t, .2]
```

```
NIntegrate[Max[0, 1.1 - 4 xx[w, .2, .1]] Exp[-w^2 / 2], {w, -∞, ∞}] / Sqrt[2 π] -
 put[1.1, .1]
pr[a_] :=
  -Log[NIntegrate[Exp[-γ a (-xx[w, mpr, t]) - w^2 / 2], {w, -∞, ∞}] / Sqrt[2 π]] / γ;
int[a_, w_] := -γ a (-xx[w, mpr, t]) - w^2 / 2;
pr2[a_, s_] := -Log[NIntegrate[Exp[int[a, w]], {w, -∞, s}] / Sqrt[2 π]] / γ;
s0 = 63; s0 xx[w, mpr, t] /. # & /@ Solve[int[h s0, w] == 0, w]
pr[h #] & /@ {37.46351154411736, 42.021013252888586, 63.687969624999518, 1000}
```

-8.8414×10^{-30}

Solve::ifun : Inverse functions are being used by Solve, so some
solutions may not be found; use Reduce for complete solution information. >>

$\{56.3799, 62.7408, 2.33098 \times 10^{6}\}$

NIntegrate::errprec : Catastrophic loss of precision in the global
error estimate due to insufficient WorkingPrecision or divergent integral. >>

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error estimate due to insufficient WorkingPrecision or divergent integral. >>

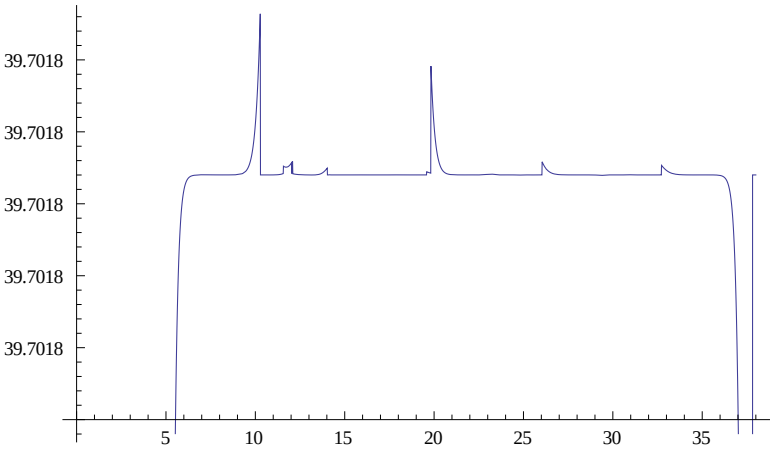
General::stop : Further output of NIntegrate::errprec will be suppressed during this calculation. >>

$$\left\{1000.\ \text{Log}\left[\frac{1}{\sqrt{2\pi}}\ \text{NIntegrate}\left[\text{Exp}\left[-\gamma\ (-24.9757)\ (-\text{xx}[w, \text{mpr}, t]) - \frac{w^2}{2}\right], \{w, -\infty, \infty\}\right]\right],\right.$$
$$1000.\ \text{Log}\left[\frac{1}{\sqrt{2\pi}}\ \text{NIntegrate}\left[\text{Exp}\left[-\gamma\ (-28.014)\ (-\text{xx}[w, \text{mpr}, t]) - \frac{w^2}{2}\right], \{w, -\infty, \infty\}\right]\right],$$
$$1000.\ \text{Log}\left[\frac{1}{\sqrt{2\pi}}\ \text{NIntegrate}\left[\text{Exp}\left[-\gamma\ (-42.4586)\ (-\text{xx}[w, \text{mpr}, t]) - \frac{w^2}{2}\right], \{w, -\infty, \infty\}\right]\right],$$
$$\left.1000.\ \text{Log}\left[\frac{1}{\sqrt{2\pi}}\ \text{NIntegrate}\left[\text{Exp}\left[\frac{1}{3}\ (-\gamma)\ (-2000)\ (-\text{xx}[w, \text{mpr}, t]) - \frac{w^2}{2}\right], \{w, -\infty, \infty\}\right]\right]\right\}$$

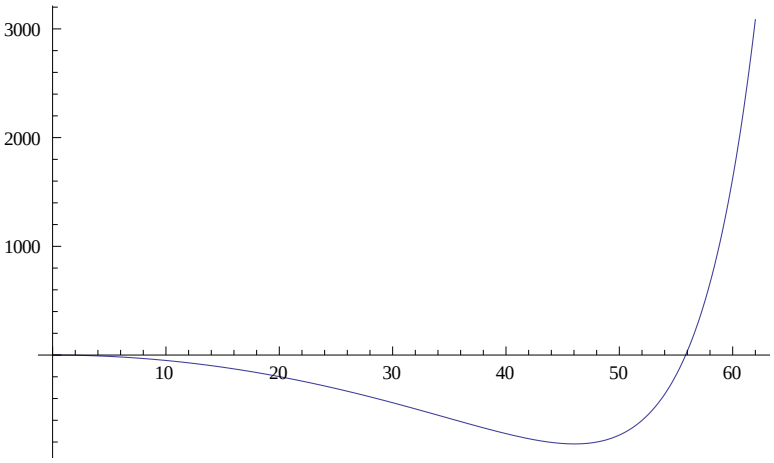
Solve::ifun : Inverse functions are being used by Solve, so some
solutions may not be found; use Reduce for complete solution information. >>

$$\left\{\left\{w \to -\frac{2\ \text{ProductLog}\left[-\frac{\sqrt{a\ e^{-\frac{t^2}{2} + \text{mpr}\,t^2}\ t^2\ \gamma}}{\sqrt{2}}\right]}{t}\right\}, \left\{w \to -\frac{2\ \text{ProductLog}\left[\frac{\sqrt{a\ e^{-\frac{t^2}{2} + \text{mpr}\,t^2}\ t^2\ \gamma}}{\sqrt{2}}\right]}{t}\right\}\right\}$$

```
Plot[{pr2[h 62, s]}, {s, 0, 38}]
```




```
Plot[int[h 62, s], {s, 0, 62}, PlotRange → All]
```



Demonstration für das Ausbleiben der Singularitä t

```
g[w_] := Exp[.5 w] - w^2
p[s_] := Log[NIntegrate[Exp[g[w]], {w, -∞, s}]]
Plot[g[w], {w, -10, 10}]
Plot[p[s], {s, 0, 10}]
```