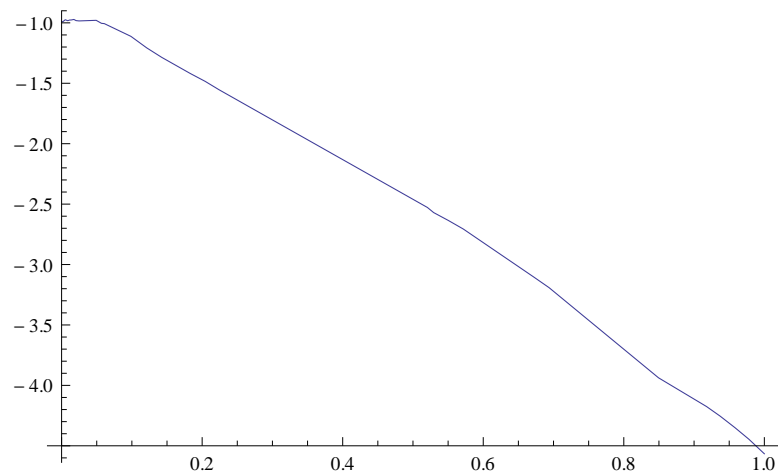


```

A = RandomReal[{-5, 5}, {100, 2}]
A = {#[[1]], Sin#[[2]]} & /@ A;
f[x0_] := Module[{x = x0, A = A},
  A = #[[1]] * x + #[[2]] (1 - x) & /@ A;
  A = Sort[A];
  A[[Ceiling[0.05 * Length[A]]]]
]
f[0]
-0.9928

```

```
Plot[f[x], {x, 0, 1}]
```



```
Exit[]
```

1

```
Solve[mu == x * H * (a + b) + (1 - x) a A + (1 - x) b R - 3 G - 3 M, x]
```

$$\left\{ \left\{ x \rightarrow \frac{a A - 3 G - 3 M - \mu + b R}{a A - a H - b H + b R} \right\} \right\}$$

```
CForm[%[[1, 1, 2]]]
```

$$(aA - 3G - 3M - \mu + bR)/(aA - aH - bH + bR)$$

2

```
Solve[mu == x * H * (a + b) + (1 - x) a A + (1 - x) b R - 3 G - x t (a + b + a + b), x]
```

$$\left\{ \left\{ x \rightarrow \frac{a A - 3 G - \mu + b R}{a A - a H - b H + b R + 2 a t + 2 b t} \right\} \right\}$$

```
CForm[%[[1, 1, 2]]]
```

$$(aA - 3G - \mu + bR)/(aA - aH - bH + bR + 2a*t + 2b*t)$$

3

```
Solve[mu == x * H * (a + b) + (1 - x) a A + (1 - x) b R - 3 G - 2 M - x a t, x]
```

$$\left\{ \left\{ x \rightarrow \frac{a A - 3 G - 2 M - \mu + b R}{a A - a H - b H + b R + a t} \right\} \right\}$$

```
CForm[%[[1, 1, 2]]]
```

$$(a A - 3 G - 2 M - \mu + b R) / (a A - a H - b H + b R + a t)$$

```
4
```

```
Solve[mu == x * H * (a + b) + (1 - x) a A + (1 - x) b R - 3 G - M - x t (a + b), x]
```

$$\left\{ \left\{ x \rightarrow \frac{a A - 3 G - M - \mu + b R}{a A - a H - b H + b R + a t + b t} \right\} \right\}$$

```
CForm[%[[1, 1, 2]]]
```

$$(a A - 3 G - M - \mu + b R) / (a A - a H - b H + b R + a t + b t)$$

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

```
{{x -> 0.896996}}
```

```
f[x_] := x * H * (a + b) + (1 - x) a A + (1 - x) b R - 3 G - Min[M, x (a + b) t];
```

```
Reduce[mu == f[x] && 0 < x < 1 && a < b && a > 0 && b > 0, x]
```

```
$Aborted
```

```
Exit[]
```

```
CForm[f[x]]
```

$$\begin{aligned} & -3 G + (a + b + c) (A e^{(1-x)} + (1-e) R^{(1-x)} + H x) - \\ & \quad \text{Min}(M, (a + b + c) t x) - \text{Min}(M, \\ & \quad \quad \text{Abs}(t (b - (a + b + c) (1-e) (1-x)))) - \\ & \quad \text{Min}(M, t \text{Abs}(a - (a + b + c) e^{(1-x)})) \end{aligned}$$

```
Exit[]
```

```
f[x_] := (a + b + c) (x * H + (1 - x) e A + (1 - x) (1 - e) R) - 3 G - Min[M, x (a + b + c) t] -
```

```
Min[M, t Abs[a - (1 - x) e (a + b + c)]] - Min[M, Abs[t (b - (1 - x) (1 - e) (a + b + c))]]];
```

```
S = Solve[mu == f[x], x]; Flatten[{#[[2]]} & /@ Transpose[S][[1]]]
```

```
$Aborted
```

```
Union[AA1, AA2]
```

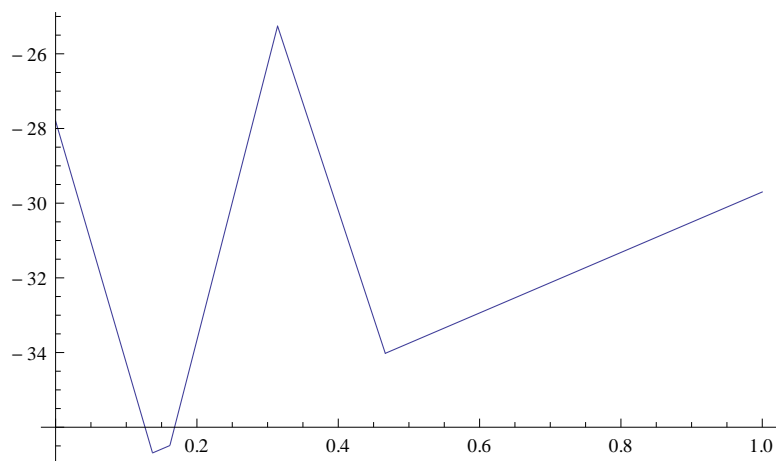
```
CForm[%]
```

```
mu = 2; H = 3; A = 1.1; R = 10.10; a = 5; b = 3; c = 0.1; e = 0.9; M = 10; G = 8; t = 9;
```

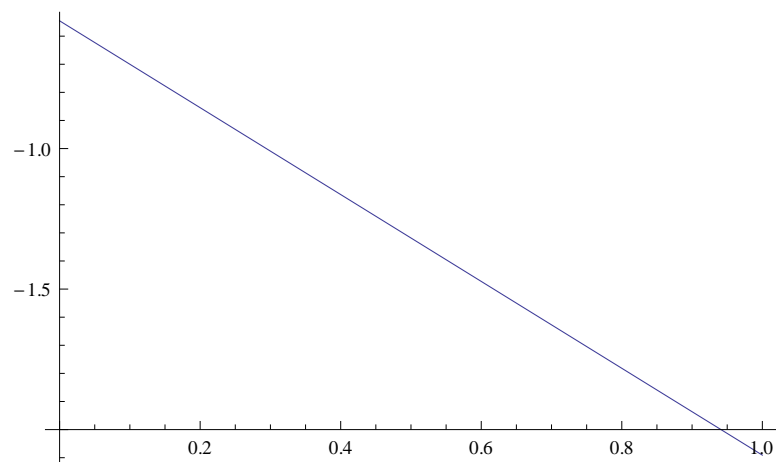
```
f[x_] := (a + b + c) (x * H + (1 - x) e A + (1 - x) (1 - e) R) - 3 G - Min[M, x (a + b + c) t] -
```

```
Min[M, t Abs[a - (1 - x) e (a + b + c)]] - Min[M, Abs[t (b - (1 - x) (1 - e) (a + b + c))]]];
```

```
Plot[f[x], {x, 0.0, 1}, PlotRange -> All]
```



```
Plot[
  ((x * H + (1 - x) a / (a + b) A + (1 - x) b / (a + b) R) (a + b) - 3 G - 3 M) / (a + b), {x, 0, 1}]
```



```
CForm[x * H * (a + b) + (1 - x) a A + (1 - x) b R -
  3 G - Min[M, x (a + b) t] - Min[M, x a t] - Min[M, x b t]]
-3*G + a*A*(1 - x) + b*R*(1 - x) + (a + b)*H*x - Min(M,a*t*x) -
  Min(M,b*t*x) - Min(M,(a + b)*t*x)
```

```
Exit[]
```

```
Simplify[
  Solve[
$$\frac{a A - 3 G - \mu + b R}{a A - a H - b H + b R + 2 a t + 2 b t} == \frac{a A - 3 G - M - \mu + b R}{a A - a H - b H + b R + a t + b t}, \mu][[1, 1, 2]]$$

  1
  (a + b) t
  (a2 A t + a (-A M + H M + A b t - 3 G t - 2 M t + b R t) + b (H M - 3 G t + b R t - M (R + 2 t)))
```

CForm [%]

```
(Power(a,2)*A*t + a*(-(A*M) + H*M + A*b*t - 3*G*t - 2*M*t + b*R*t) +  
  b*(H*M - 3*G*t + b*R*t - M*(R + 2*t)))/((a + b)*t)
```