Lösungen

1

Schnitt: [-7, (-4, 6), 8]
Vereinigung: (-4, 1[, 6), Infinity)

Resultat: (-4, Infinity)

2

```
Log[Log[E^c]] /. Log[E^c_] → c Log[E]
```

```
Log[c]
```

```
Log[Log[E^(2 c)]] /. Log[E^c_] → c Log[E]
```

```
Log[2 c]
```

```
u = (Log[Log[E^c]] + Log[Log[E^(2 c)]] /. Log[E^c_] → c Log[E]) /.
  Log[a_] + Log[b_] → Log[a b]
```

```
Log[2 c^2]
```

```
v = ((c^Sqrt[8]) / (c^Sqrt[2]))^(Sqrt[2] / Sqrt[3]) /. (c_^a_)^b_ → c^(a b)
```

$$c^{\frac{2}{\sqrt{3}}}$$

```
u + v // Simplify
```

$$c^{\frac{2}{\sqrt{3}}} + \text{Log}[2\,c^2]$$

3

```
f[x_, b_] := 2 x^2 + 3 b x + 48
```

```
Solve[f[x, b] == 0, {x}]
```

$$\left\{\left\{x \to \frac{1}{4}\left(-3\,b - \sqrt{3}\,\sqrt{-128 + 3\,b^2}\right)\right\}, \left\{x \to \frac{1}{4}\left(-3\,b + \sqrt{3}\,\sqrt{-128 + 3\,b^2}\right)\right\}\right\}$$

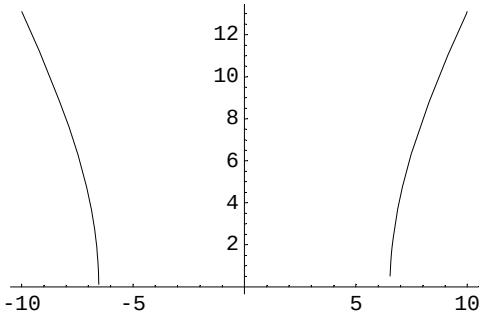
```
Solve[Sqrt[-128 + 3 b^2] == 0, {b}]
```

$$\left\{\left\{b \to -8\sqrt{\frac{2}{3}}\right\}, \left\{b \to 8\sqrt{\frac{2}{3}}\right\}\right\}$$

```
N[%]
```

```
{{b → -6.53197}, {b → 6.53197}}
```

```
Plot[Sqrt[-128 + 3 b^2], {b, -10, 10}];
```



4

```
Solve[{
  3 y + z == 56,
  z - w == 42,
  2 x + y == 14,
  Sqrt[x^2] + w == 0
 }, {x, y, z, w}]
```

```
{{y → 6, z → 38, w → -4, x → 4}}
```

5

```
Remove["Global`*"]
```

```
z = 23.71467467;
10^5 u == Floor[10^5 z]
```

```
100000 u == 2371467
```

```
10^2 u == Floor[10^2 z]
```

```
100 u == 2371
```

```
10^5 u - 10^2 u == Floor[10^5 z] - Floor[10^2 z]
```

```
99900 u == 2369096
```

```
Solve[10^5 u - 10^2 u == Floor[10^5 z] - Floor[10^2 z], {u}]
```

$$\left\{\left\{u \to \frac{592274}{24975}\right\}\right\}$$

6

```
(1 - Log[12, Log[12, x]]) (Log[4, Log[3, x]] + 1) == 0
```

$$\left(1+\frac{\text{Log}\left[\frac{\text{Log}[x]}{\text{Log}[3]}\right]}{\text{Log}[4]}\right)\left(1-\frac{\text{Log}\left[\frac{\text{Log}[x]}{\text{Log}[12]}\right]}{\text{Log}[12]}\right)==0$$

```
Simplify[(1 - Log[12, Log[12, x]]) (Log[4, Log[3, x]] + 1)] == 0
```

$$\frac{(\text{Log}[12\,\text{Log}[12]]-\text{Log}[\text{Log}[x]])\,\text{Log}\left[\frac{4\,\text{Log}[x]}{\text{Log}[3]}\right]}{\text{Log}[4]\,\text{Log}[12]}==0$$

```
Solve[Simplify[(1 - Log[12, Log[12, x]]) (Log[4, Log[3, x]] + 1)] == 0, {x}]
```

$$\{\{x\to 8916100448256\},\{x\to 3^{1/4}\}\}$$

7

```
Log[x^5] /. Log[a_^b_] → b Log[a]
```

$$5\,\text{Log}[x]$$

```
Solve[0 == Evaluate[(Log[x])^2 + (Log[x^5] /. Log[a_^b_] → b Log[a]) + 6], {x}]
```

$$\left\{\left\{x\to\frac{1}{e^3}\right\},\left\{x\to\frac{1}{e^2}\right\}\right\}$$

8

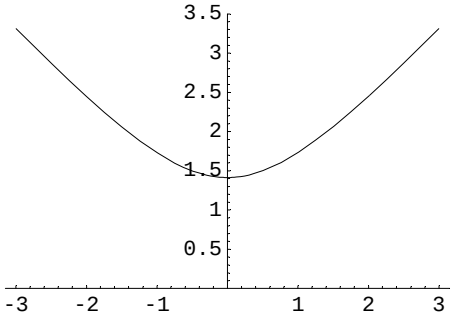
```
Sqrt[Sqrt[(s^2 + 2)^2]] == 1
```

$$\left((2+s^2)^2\right)^{1/4}==1$$

```
Solve[Sqrt[Sqrt[(s^2 + 2)^2]] == 1, {s}]
```

$$\left\{\{s\to -i\},\{s\to i\},\left\{s\to -i\sqrt{3}\right\},\left\{s\to i\sqrt{3}\right\}\right\}$$

```
Plot[Sqrt[Sqrt[(s^2 + 2)^2]], {s, -3, 3}, PlotRange → {0, 3.5}];
```



Keine Lösung