```
        --  booleanLaws . txt
formula_list(usable)
      [∀x, ∀y, ∀z | x⊆y∪z ⟶ x∩z̄⊆y]      --  1
      [∀x, ∀y, ∀z | x⊆y ⟶ z∪x⊆z∪y]      --  2
      [∀x, ∀y | x=x∩ȳ∪x∩y]      --  3
      [∀x, ∀y | x∩y⊆y]      --  4
end_of_list
formula_list(usable)
      [∀x, ∀y | x∩y⊆y]      --  4
      [∀x, ∀y, ∀z | x∩(y∪z)⊆y∪x∩z]      --  5
      [∀x, ∀y | x=x∩y∪x∩ȳ]      --  6
      [∀x, ∀y, ∀z | x⊆y ⟶ z∪x⊆z∪y]      --  7
      [∀x, ∀y, ∀z | x⊆y ⟶ z∩x⊆z∩y]      --  8
end_of_list
formula_list(usable)
      [∀x | x∪∅=x]      --  9
      [∀x, ∀y, ∀z | x⊆y & y⊆z ⟶ x⊆z]      --  10
end_of_list
```

formula_list(usable) -- De Morgan 's laws

$[\forall x, \forall y \mid \overline{x \cap y} = \bar{x} \cup \bar{y}]$ -- 11a

$[\forall x, \forall y \mid \overline{x \cup y} = \bar{x} \cap \bar{y}]$ -- 11b

end_of_list

formula_list(usable) -- inclusion laws

$[\forall x, \forall y, \forall z \mid x \subseteq z \,\&\, y \subseteq z \rightarrow x \cup y \subseteq z]$ -- 12

end_of_list

formula_list(usable) -- inclusion laws

$[\forall x, \forall y \mid x \subseteq y \,\&\, y \subseteq x \rightarrow x = y]$ -- 13

end_of_list

formula_list(usable) -- special cases of the double complement law

$\overline{\delta} = \iota$ -- 14a

$\overline{\emptyset} = \mathbb{1}$ -- 14b

end_of_list

formula_list(usable) -- double complement law , and a corollary of it

$[\forall x \mid \bar{\bar{x}} = x]$ -- 15

$[\forall x, \forall y \mid x \cup y = y \rightarrow \overline{y \cup \bar{x}} = \emptyset]$ -- 16a

$[\forall x, \forall y \mid \overline{y \cup \bar{x}} = \emptyset \rightarrow x \cup y = y]$ -- 16b

end_of_list

formula_list(usable)

$[\forall x \mid x \cup x = x]$ -- 17

$[\forall x, \forall y, \forall z \mid x \cup y = y \ \& \ y \cup z = z \rightarrow x \cup z = z]$ -- 18

$[\forall x, \forall y \mid x \cup y = y \rightarrow \bar{y} \cup \bar{x} = \bar{x}]$ -- 19

end_of_list

formula_list(usable)

$[\forall x, \forall y \mid x \cap y = y \cap x]$ -- 20

$[\forall x, \forall y \mid x \cap \bar{y} = \emptyset \rightarrow x \cup y = y]$ -- 21a

$[\forall x, \forall y \mid x \cup y = y \rightarrow x \cap \bar{y} = \emptyset]$ -- 21b

$[\forall x, \forall y \mid x \cap y = \emptyset \ \& \ x \cup y = \mathbb{1} \rightarrow \bar{x} = y]$ -- 22

$[\forall x, \forall y \mid \bar{x} = y \rightarrow x \cap y = \emptyset]$ -- 23

$[\forall x, \forall y \mid \bar{x} = y \rightarrow x \cup y = \mathbb{1}]$ -- 24

end_of_list

formula_list(usable) -- almost the distributive law of intersection over union

$[\forall x, \forall y, \forall z \mid z \cap y = \emptyset \rightarrow (x \cup y) \cap z = z \cap x]$ -- 25

end_of_list

formula_list(usable)

$[\forall x, \forall y, \forall z \mid x \subseteq y \ \& \ x \subseteq z \rightarrow x \subseteq y \cap z]$ -- 26

$[\forall x, \forall y \mid x \cap y \subseteq x \ \& \ x \cap y \subseteq y]$ -- 27

end_of_list

```
formula_list(usable)
      [∀x | x∩x=x]      --  28
end_of_list
formula_list(usable)
      [∀x, ∀y, ∀z | x⊆y & x⊆z → x⊆y∩z]      --  29
end_of_list
```