```
f[T_, RH_] := Log[(RH / 100) * Exp[(b - T / d) * (T / (c + T))]]
```

```
Tdp[T_, RH_] := (c * f[T, RH]) / (b - f[T, RH])
```

```
Tdp[T, RH]
```

$$\frac{c\,\text{Log}\left[\frac{1}{100}\,e^{\frac{T\left(b-\frac{T}{d}\right)}{c+T}}\,RH\right]}{b-\text{Log}\left[\frac{1}{100}\,e^{\frac{T\left(b-\frac{T}{d}\right)}{c+T}}\,RH\right]}$$

This represents the Arden Buck equation, relating the relative humidity to the dew point at a certain ambient temperature T [http://en.wikipedia.org/wiki/Dew_point].

```
b = 18.678
c = 257.14
d = 234.5
```

```
18.678
```

```
257.14
```

```
234.5
```

The units of parameters b and c are degrees Celcius. Hence, we can obtain the relationship between relative humidity and dew point at an ambient temperature as

```
Tdp20[RH_] := Tdp[20, RH]
```

```
Tdp20[RH]
```

$$\frac{257.14\,\text{Log}[0.0382576\,RH]}{18.678-\text{Log}[0.0382576\,RH]}$$

```
RH[Tdp_] := InverseFunction[Tdp20][Tdp]
```

```
RH[Tdp]
```

$$e^{\frac{1.56811\times10^{19}+4.10013\times10^{17}\,Tdp}{4.80511\times10^{18}+1.86867\times10^{16}\,Tdp}}$$