

PIECEWISE LINEAR TRANSFORMATION: 50 PIVOTS

y-values

```
percents= [ 1.  9.79891606  17.82362289  25.1422425  31.81690291
 37.90426555  43.45600627  48.51925398  53.13699077  57.34841678
 61.18928294  64.69219452  67.88688785  70.8004828  73.45771297
 75.88113568  78.09132347  80.10703869  81.94539282  83.62199171
 85.15106808  86.54560229  87.81743261  88.97735565  90.03521804
 91.          91.87989161  92.68236229  93.41422425  94.08169029
 94.69042656  95.24560063  95.7519254  96.21369908  96.63484168
 97.01892829  97.36921945  97.68868879  97.98004828  98.2457713
 98.48811357  98.70913235  98.91070387  99.09453928  99.26219917
 99.41510681  99.55456023  99.68174326  99.79773557  99.9035218
100.    ]
```

x-values

```
helpful_votes = [0.0, 0.0, 1.0, 1.0, 1.0, 1.0, 1.0, 2.0, 2.0, 2.0,
2.0, 3.0, 3.0, 4.0, 4.0, 4.0, 5.0, 6.0, 6.0, 7.0, 8.0, 9.0, 9.0, 10.0,
11.0, 12.0, 14.0, 15.0, 16.0, 18.0, 19.0, 21.0, 23.0, 25.0, 28.0,
30.0, 33.0, 36.0, 40.0, 44.0, 48.0, 54.0, 60.0, 67.0, 77.0, 89.0,
104.0, 126.0, 163.0, 243.0, 23311.0]
```

HELPFUL RATING METRIC

- Helpful Votes scaled between 0 and 1 and Helpful Vote Percentage can now be combined.
- Percentage of Helpful Reviews per Book added to balanced popularity.
- Multiplying the standard deviation of each column by 100 and rounding down gives 0.42 for Helpful Votes Scaled and 0.56 for Helpful Percentage.
- The remaining percentage is left for Percentage of Helpful Reviews per Book.

$$\text{Helpful_Rating} = 0.42 * \text{Helpful_Votes_Scaled} + 0.56 * \text{Helpful_Percentage} + 0.02 * \text{Percentage_Helpful_Reviews_Book}$$