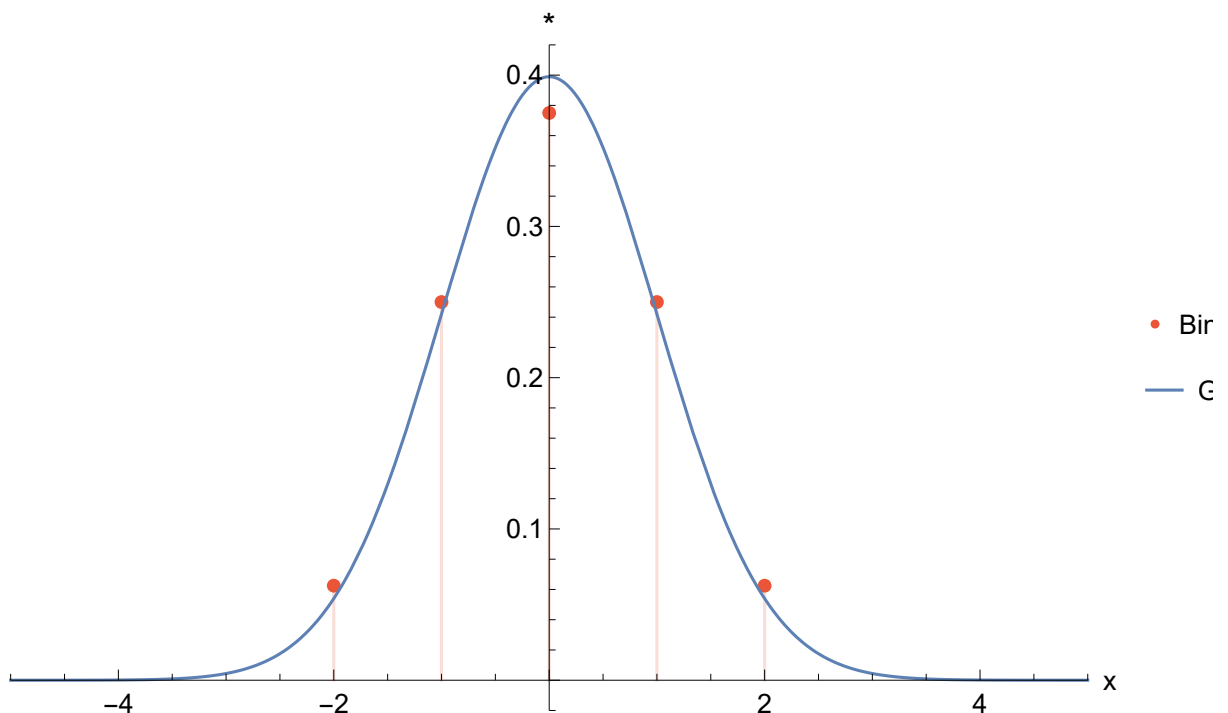


```

filter = {1, 4, 6, 4, 1};
empirical = EmpiricalDistribution[
   $\frac{1}{\text{Length}[\text{filter}]} * \text{filter} \rightarrow \text{Range}[1, \text{Length}[\text{filter}]] - \frac{\text{Length}[\text{filter}] + 1}{2}$ ];
idx = Range[1, Length[filter]] -  $\frac{\text{Length}[\text{filter}] + 1}{2}$ ;
σ = StandardDeviation[empirical]
1

Show[
  DiscretePlot[PDF[empirical, x], {x, idx},
    PlotStyle → ■,
    ImageSize → Large,
    PlotRange → {{-5, 5}, {-0.02, 0.42}},
    AxesLabel → {"x", "*"},
    BaseStyle → {FontSize → 14},
    PlotLegends → PointLegend[{"Binomial"}, LabelStyle → {FontSize -> 14}]
  ],
  Plot[PDF[NormalDistribution[0, σ], x], {x, -5, 5},
    PlotRange → All,
    PlotLegends → LineLegend[{"Gaussian"}, LabelStyle → {FontSize -> 14}]
  ]
]

```



```

filter2D = {filter}^T.{filter};
filter2D // MatrixForm
Total[filter2D, 2]

```

```


$$\begin{pmatrix} 1 & 4 & 6 & 4 & 1 \\ 4 & 16 & 24 & 16 & 4 \\ 6 & 24 & 36 & 24 & 6 \\ 4 & 16 & 24 & 16 & 4 \\ 1 & 4 & 6 & 4 & 1 \end{pmatrix}$$


```

