

NN = 3;

$$\mathbf{xk} = \text{Cos}\left[\frac{\pi * (2 * \mathbf{k} + 1)}{2 * \text{NN} + 2}\right];$$

$$\mathbf{f}[\mathbf{x}_] = \mathbf{e}^{\mathbf{x}};$$

$$\mathbf{c0} = \frac{1}{\text{NN} + 1} * \sum_{\mathbf{k}=0}^{\text{NN}} \mathbf{f}[\mathbf{xk}]$$

$$\frac{1}{4} \left(\mathbf{e}^{-\text{Cos}\left[\frac{\pi}{8}\right]} + \mathbf{e}^{\text{Cos}\left[\frac{\pi}{8}\right]} + \mathbf{e}^{-\text{Sin}\left[\frac{\pi}{8}\right]} + \mathbf{e}^{\text{Sin}\left[\frac{\pi}{8}\right]} \right)$$

$$\frac{1}{4} \left(\mathbf{e}^{-\text{Cos}\left[\frac{\pi}{8}\right]} + \mathbf{e}^{\text{Cos}\left[\frac{\pi}{8}\right]} + \mathbf{e}^{-\text{Sin}\left[\frac{\pi}{8}\right]} + \mathbf{e}^{\text{Sin}\left[\frac{\pi}{8}\right]} \right) // \text{N}$$

1.26607

NumberForm[N[Pi], 10]

3.141592654

$$\text{NumberForm}\left[\text{N}\left[\frac{1}{4} \left(\mathbf{e}^{-\text{Cos}\left[\frac{\pi}{8}\right]} + \mathbf{e}^{\text{Cos}\left[\frac{\pi}{8}\right]} + \mathbf{e}^{-\text{Sin}\left[\frac{\pi}{8}\right]} + \mathbf{e}^{\text{Sin}\left[\frac{\pi}{8}\right]} \right)\right], 9\right]$$

1.26606568

$$\mathbf{c0} = \text{NumberForm}\left[\text{N}\left[\frac{1}{\text{NN} + 1} * \sum_{\mathbf{k}=0}^{\text{NN}} \mathbf{f}[\mathbf{xk}]\right], 9\right]$$

1.26606568

$$\mathbf{c1} = \text{NumberForm}\left[\text{N}\left[\frac{2}{\text{NN} + 1} * \sum_{\mathbf{k}=0}^{\text{NN}} \mathbf{f}[\mathbf{xk}] * \mathbf{xk}\right], 9\right]$$

1.130315

$$\mathbf{c2} = \text{NumberForm}\left[\text{N}\left[\frac{2}{\text{NN} + 1} * \sum_{\mathbf{k}=0}^{\text{NN}} \mathbf{f}[\mathbf{xk}] * \text{Cos}\left[\frac{2 * \pi * (2 * \mathbf{k} + 1)}{2 * \text{NN} + 2}\right]\right], 8\right]$$

0.27145036

$$\mathbf{c3} = \text{NumberForm}\left[\text{N}\left[\frac{2}{\text{NN} + 1} * \sum_{\mathbf{k}=0}^{\text{NN}} \mathbf{f}[\mathbf{xk}] * \text{Cos}\left[\frac{3 * \pi * (2 * \mathbf{k} + 1)}{2 * \text{NN} + 2}\right]\right], 7\right]$$

0.04379392

$$\mathbf{p3}[\mathbf{x}_] = \mathbf{c0} * 1 + \mathbf{c1} * \mathbf{x} + \mathbf{c2} * (2 * \mathbf{x}^2 - 1) + \mathbf{c3} * (4 * \mathbf{x}^3 - 3 * \mathbf{x}) // \text{ExpandAll}$$

$$-3 * 0.04379392 + 4 * \mathbf{x}^3 * 0.04379392 - 0.27145036 + 2 * \mathbf{x}^2 * 0.27145036 + \mathbf{x} * 1.130315 + 1.26606568$$

$$-3 * \mathbf{x} * 0.04379392 + 4 * \mathbf{x}^3 * 0.04379392 -$$

$$0.27145036 + 2 * \mathbf{x}^2 * 0.27145036 + \mathbf{x} * 1.130315 + 1.26606568$$

$$\text{NumberForm}\left[\text{N}\left[0.994615320000 + 0.998933024 * \mathbf{x} + 0.54290072 * \mathbf{x}^2 + 0.175175968 * \mathbf{x}^3\right], 9\right]$$

$$0.99461532 + 0.998933024 * \mathbf{x} + 0.54290072 * \mathbf{x}^2 + 0.175175968 * \mathbf{x}^3$$

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x0 = -1.0;
f[x_] = -x^3 - Cos[x];
fp[x_] = -3 * x^2 - Sin[x];
x1 = x0 -  $\frac{f[x0]}{fp[x0]}$ 
-0.787032

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x2 = x1 -  $\frac{f[x1]}{fp[x1]}$ 
-0.574064

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In[6]:= GERCEK =  $\int_{0.5}^{3.5} x * \sqrt{(16 - x^2)^3} \, dx$ 

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Out[6]= 191.447

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In[7]:= f[x_] = x *  $\sqrt{(16 - x^2)^3}$ ;

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In[8]:= f[0.5]
f[1.0]
f[1.5]
f[2.0]
f[2.5]
f[3.0]
f[3.5]

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Out[8]= 31.2529

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Out[9]= 58.0948

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Out[10]= 76.4795

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Out[11]= 83.1384

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Out[12]= 76.1109

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Out[13]= 55.5608

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Out[14]= 25.4165

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In[15]:= (* YAMUKLAR YÖNTEMİ n=6 ve h= 0.5*)

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yamuk = 0.5 *  $\left( \frac{f[0.5]}{2} + f[1.0] + f[1.5] + f[2.0] + f[2.5] + f[3.0] + \frac{f[3.5]}{2} \right)$ 

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Out[15]= 188.86

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In[16]:= (* Simpson  $\frac{1}{3}$  YÖNTEMİ n=6 ve h= 0.5*)

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simpson1bolu3 =

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 $\frac{0.5}{3} * (f[0.5] + 4 * f[1.0] + 2 * f[1.5] + 4 * f[2.0] + 2 * f[2.5] + 4 * f[3.0] + f[3.5])$ 

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Out[16]= 191.504

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