

In[1]:= **f[x_] := Sin[x^2]**

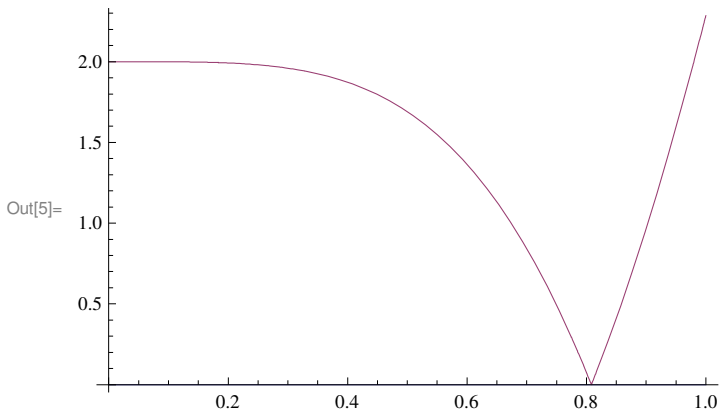
In[2]:= **D[f[x], {x, 2}]**

In[3]:= **g[x_] := 2 Cos[x^2] - 4 x^2 Sin[x^2]**

In[4]:= **M = 2 + 4**

Out[4]= 6

In[5]:= **Plot[{0, Abs[g[x]]}, {x, 0, 1}]**



In[6]:= **Abs[g[1]]**

Out[6]= $-2 \cos[1] + 4 \sin[1]$

In[7]:= **N[%]**

Out[7]= 2.28528

In[8]:= **N[(1000 M / 12)^(1 / 2)]**

Out[8]= 22.3607

In[9]:= **n = 23**

Out[9]= 23

In[10]:= **h = (1 - 0) / n**

Out[10]= $\frac{1}{23}$

In[11]:= **$\frac{h}{2} (\mathbf{f}[0] + 2 \text{Sum}[\mathbf{f}[k / 23], \{k, 1, 22\}] + \mathbf{f}[1])$**

Out[11]= $\frac{1}{46} \left(2 \left(\sin\left[\frac{1}{529}\right] + \sin\left[\frac{4}{529}\right] + \sin\left[\frac{9}{529}\right] + \sin\left[\frac{16}{529}\right] + \sin\left[\frac{25}{529}\right] + \sin\left[\frac{36}{529}\right] + \sin\left[\frac{49}{529}\right] + \sin\left[\frac{64}{529}\right] + \sin\left[\frac{81}{529}\right] + \sin\left[\frac{100}{529}\right] + \sin\left[\frac{121}{529}\right] + \sin\left[\frac{144}{529}\right] + \sin\left[\frac{169}{529}\right] + \sin\left[\frac{196}{529}\right] + \sin\left[\frac{225}{529}\right] + \sin\left[\frac{256}{529}\right] + \sin\left[\frac{289}{529}\right] + \sin\left[\frac{324}{529}\right] + \sin\left[\frac{361}{529}\right] + \sin\left[\frac{400}{529}\right] + \sin\left[\frac{441}{529}\right] + \sin\left[\frac{484}{529}\right] \right) + \sin[1] \right)$

In[12]:= **a = N[%, 20]**

Out[12]= 0.31043860088116767628

In[13]:= $\int_0^1 \mathbf{f}[x] dx$

Out[13]= $\sqrt{\frac{\pi}{2}} \text{FresnelS}\left[\sqrt{\frac{2}{\pi}}\right]$

In[14]:= **b = N[%, 20]**

Out[14]= 0.31026830172338110181

In[15]:= **a - b**

Out[15]= 0.00017029915778657447

In[16]:= **% < 10⁻³**

Out[16]= True