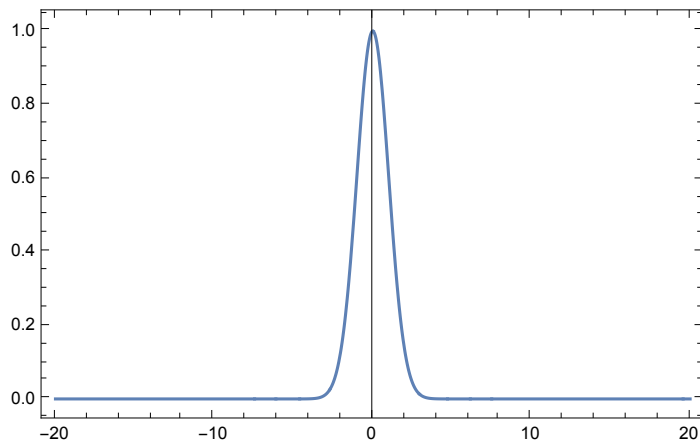


Quantum Harmonic Oscillator

A.A.S.LIKHIT

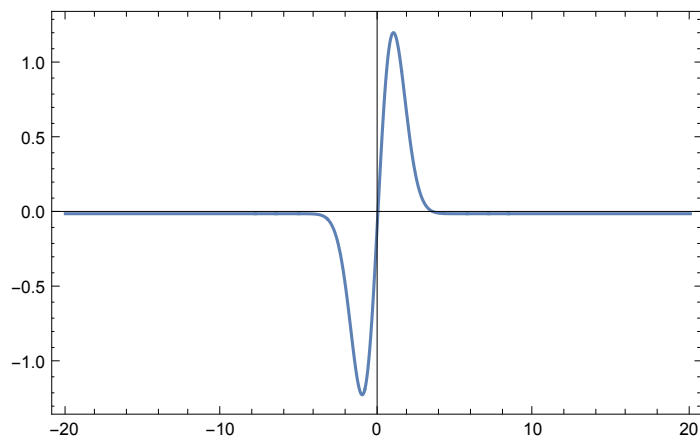
```
In[ ]:= Plot[ $\{e^{-\frac{x^2}{2}}\}$ , {x, -20, 20}, Frame → True,  
PlotRange → All, PlotLegends → "Expressions", PlotRange → Full]
```

Out[]:=



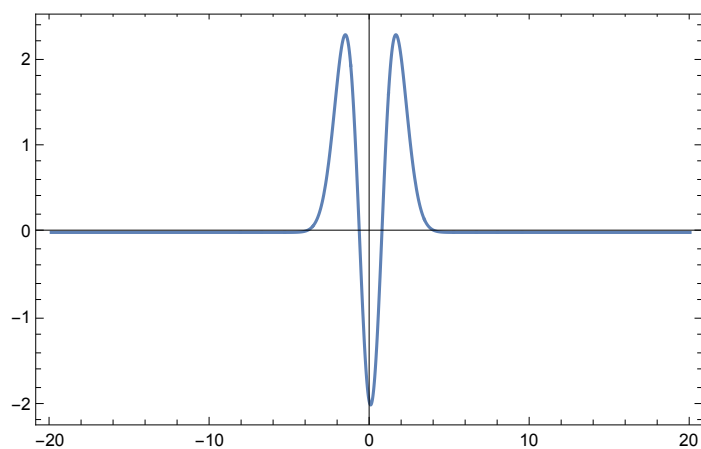
```
In[ ]:= Plot[ $\{2 * x * e^{-\frac{x^2}{2}}\}$ , {x, -20, 20}, Frame → True,  
PlotRange → All, PlotLegends → "Expressions", PlotRange → Full]
```

Out[]:=



```
In[*]:= Plot[ { (4 * x^2 - 2) e^(-x^2/2) }, {x, -20, 20}, Frame -> True,
  PlotRange -> All, PlotLegends -> "Expressions", PlotRange -> Full]
```

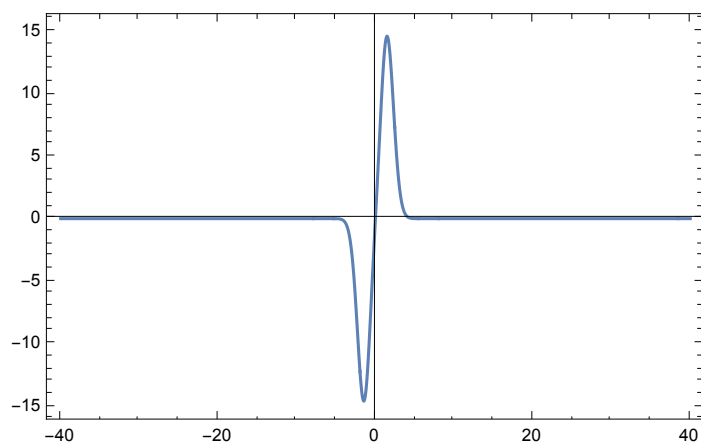
Out[*]=



```
In[*]:= Plot[ (8 * x^3 + 12 * x) e^(-x^2/2), {x, -40, 40}, Frame -> True,
  PlotRange -> All, PlotLegends -> "Expressions", PlotRange -> Full]
```

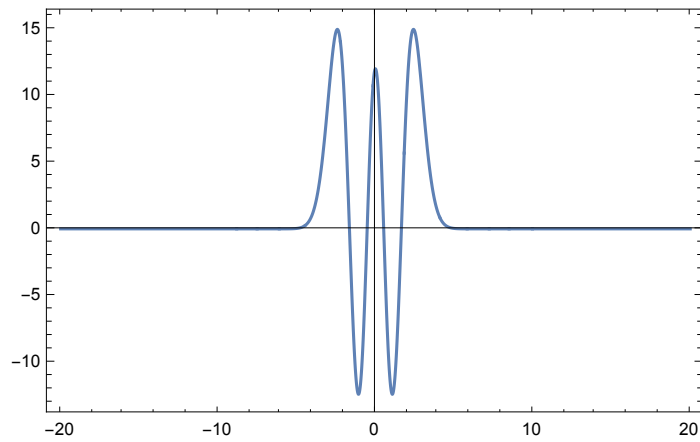
General: Exp[-799.935] is too small to represent as a normalized machine number; precision may be lost. [i](#)

Out[*]=



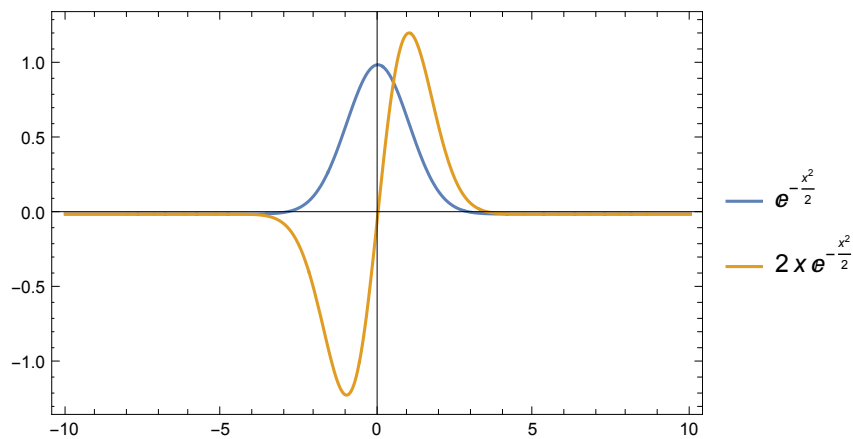
```
In[*]:= Plot[ (16 * x^4 - 48 * x^2 + 12) e^(-x^2/2), {x, -20, 20}, Frame -> True,
  PlotRange -> All, PlotLegends -> "Expressions", PlotRange -> Full]
```

Out[*]=



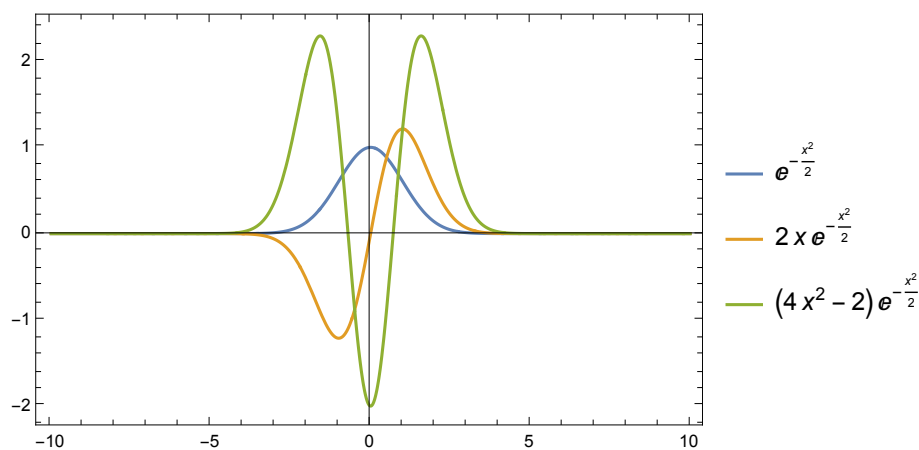
```
In[*]:= Plot[ {e^(-x^2/2), 2 * x * e^(-x^2/2)}, {x, -10, 10}, Frame -> True,
  PlotRange -> All, PlotLegends -> "Expressions", PlotRange -> Full]
```

Out[*]=



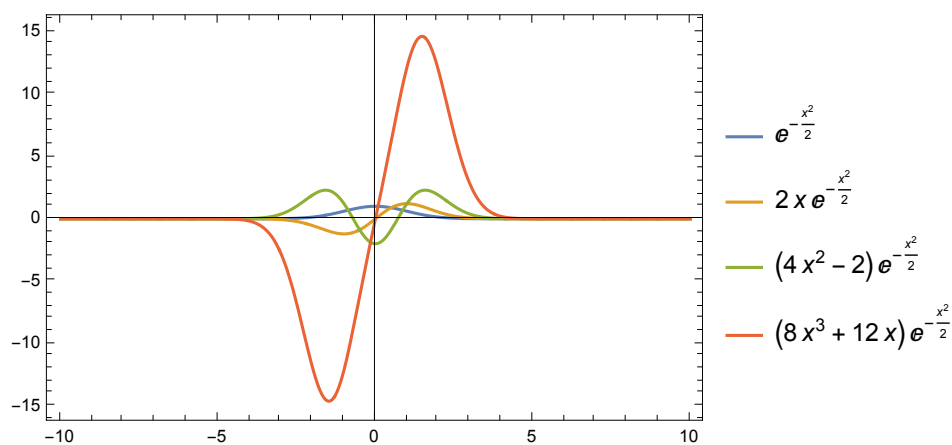
```
In[*]:= Plot[ {e^(-x^2/2), 2 * x * e^(-x^2/2), (4 * x^2 - 2) e^(-x^2/2)}, {x, -10, 10}, Frame -> True,
  PlotRange -> All, PlotLegends -> "Expressions", PlotRange -> Full]
```

Out[*]=



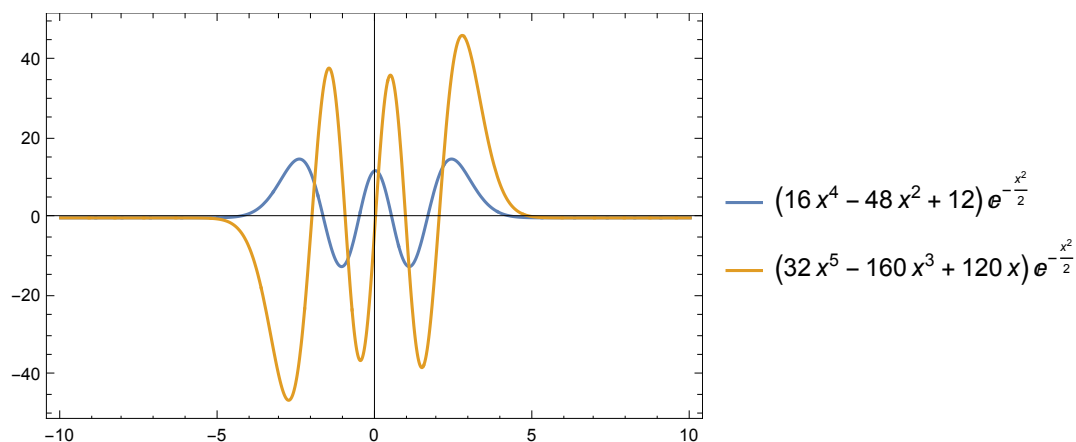
```
In[ ]:= Plot[ {e-x2/2, 2 * x * e-x2/2, (4 * x2 - 2) e-x2/2, (8 * x3 + 12 * x) e-x2/2 }, {x, -10, 10},
  Frame → True, PlotRange → All, PlotLegends → "Expressions", PlotRange → Full]
```

Out[]:=



```
In[ ]:= Plot[ { (16 * x4 - 48 * x2 + 12) e-x2/2, (32 * x5 - 160 * x3 + 120 * x) e-x2/2 }, {x, -10, 10},
  Frame → True, PlotRange → All, PlotLegends → "Expressions", PlotRange → Full]
```

Out[]:=



```

In[ ]:= Plot[ {e^(-x^2/2), 2*x*e^(-x^2/2), (4*x^2-2)*e^(-x^2/2), (8*x^3+12*x)*e^(-x^2/2),
               (16*x^4-48*x^2+12)*e^(-x^2/2), (32*x^5-160*x^3+120*x)*e^(-x^2/2)}, {x, -10, 10},
             Frame -> True, PlotRange -> All, PlotLegends -> "Expressions", PlotRange -> Full]

```

Out[]:=

