In[28]:=
```
Clear["Global`*"]
```

In[29]:=
```
a = 2; b = 1; num = 4; ρ = 2500; h = 0.01; e = 200000000000; nu = 0.33;
```

In[30]:=
```
d = e * h^3 / (12 * (1 - nu^2)) ;
```

In[31]:=
```
α = m * π / a; β = n * π / b;
```

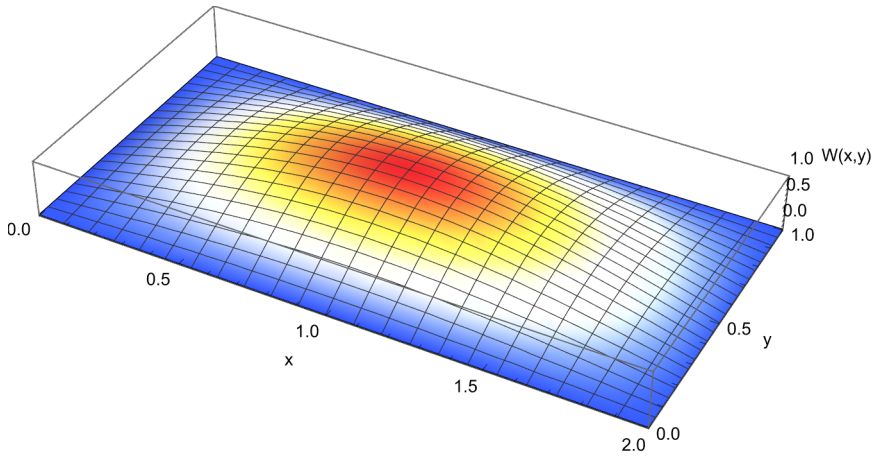
In[32]:=
```
γ = sqrt[α^2 + β^2];
```

In[33]:=
```
modeshape[m_, n_] := (Sin[m * π * x / a] * Sin[n * π * y / b]);
```

In[34]:=
```
m = 1; n = 1;
ω[m_, n_] = π^2 * ((m / a)^2 + (n / b)^2) * Sqrt[d / (ρ * h)]
Plot3D[modeshape[m, n], {x, 0, a}, {y, 0, b}, AxesLabel → {"x", "y", "W(x,y)"},
 PlotRange → {{0, a}, {0, b}, All}, BoxRatios → {a, b, 0.2},
 Mesh → 21, ColorFunction → "Temperature", ImageSize → 450]
```

Out[35]=
```
337.443
```

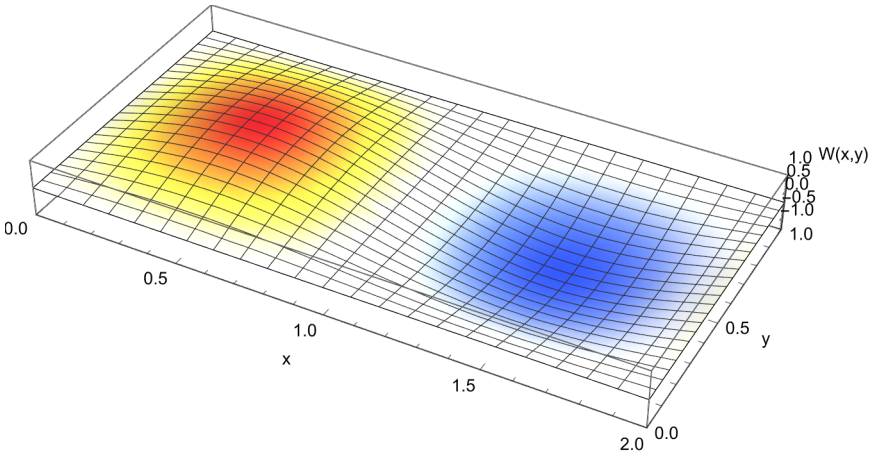
Out[36]=



In[37]:=
```
m = 2; n = 1;
ω[m_, n_] = π^2 * ((m / a)^2 + (n / b)^2) * Sqrt[d / (ρ * h)]
Plot3D[modeshape[m, n], {x, 0, a}, {y, 0, b}, AxesLabel → {"x", "y", "W(x,y)"},
 PlotRange → {{0, a}, {0, b}, All}, BoxRatios → {a, b, 0.2},
 Mesh → 21, ColorFunction → "Temperature", ImageSize → 450]
```

Out[38]=
```
539.909
```

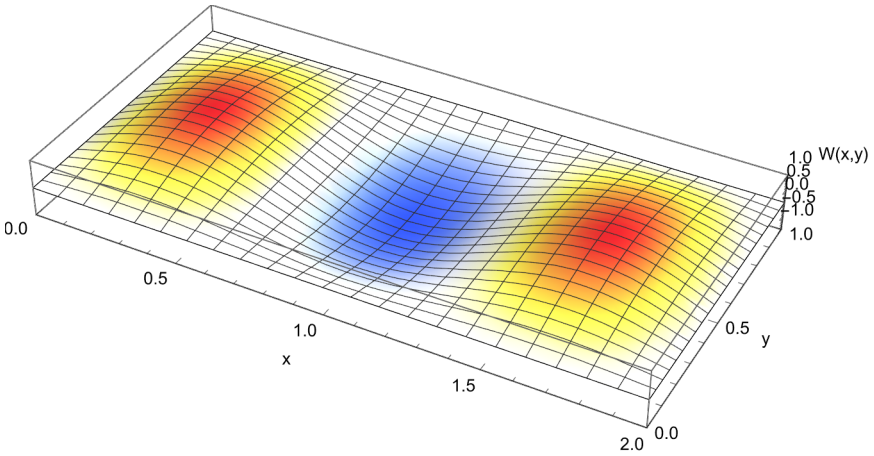
Out[39]=



In[40]:=
```
m = 3; n = 1;
ω[m_, n_] = π^2 * ((m / a)^2 + (n / b)^2) * Sqrt[d / (ρ * h)]
Plot3D[modeshape[m, n], {x, 0, a}, {y, 0, b}, AxesLabel → {"x", "y", "W(x,y)"},
 PlotRange → {{0, a}, {0, b}, All}, BoxRatios → {a, b, 0.2},
 Mesh → 21, ColorFunction → "Temperature", ImageSize → 450]
```

Out[41]=
```
877.353
```

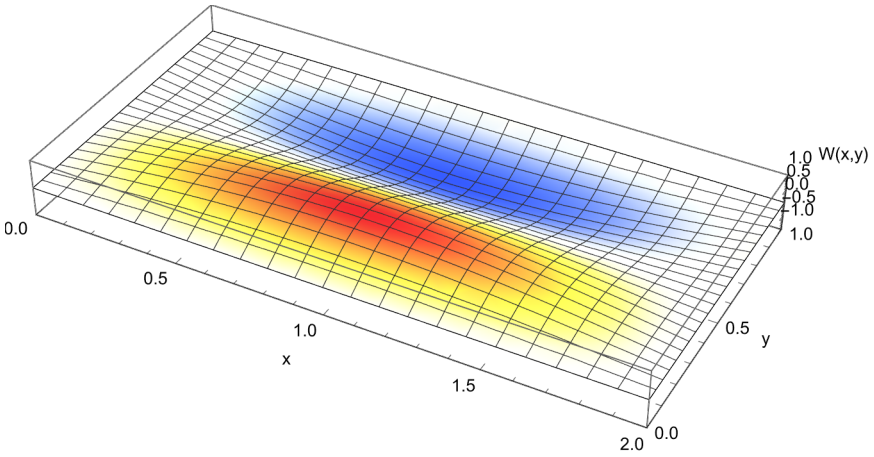
Out[42]=



In[43]:=
```
m = 1; n = 2;
ω[m_, n_] = π^2 * ((m / a)^2 + (n / b)^2) * Sqrt[d / (ρ * h)]
Plot3D[modeshape[m, n], {x, 0, a}, {y, 0, b}, AxesLabel → {"x", "y", "W(x,y)"},
 PlotRange → {{0, a}, {0, b}, All}, BoxRatios → {a, b, 0.2},
 Mesh → 21, ColorFunction → "Temperature", ImageSize → 450]
```

Out[44]=
```
1147.31
```

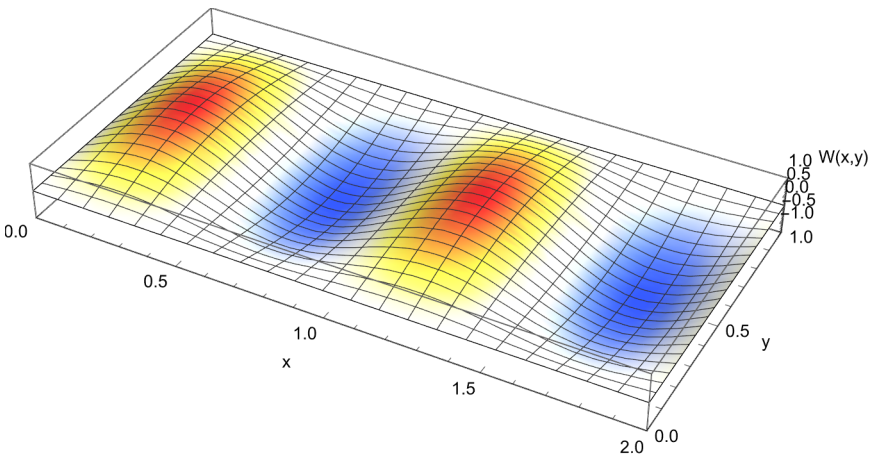
Out[45]=



In[46]:=
```
m = 4; n = 1;
ω[m_, n_] = π^2 * ((m / a)^2 + (n / b)^2) * Sqrt[d / (ρ * h)]
Plot3D[modeshape[m, n], {x, 0, a}, {y, 0, b}, AxesLabel → {"x", "y", "W(x,y)"},
 PlotRange → {{0, a}, {0, b}, All}, BoxRatios → {a, b, 0.2},
 Mesh → 21, ColorFunction → "Temperature", ImageSize → 450]
```

Out[47]=
```
1349.77
```

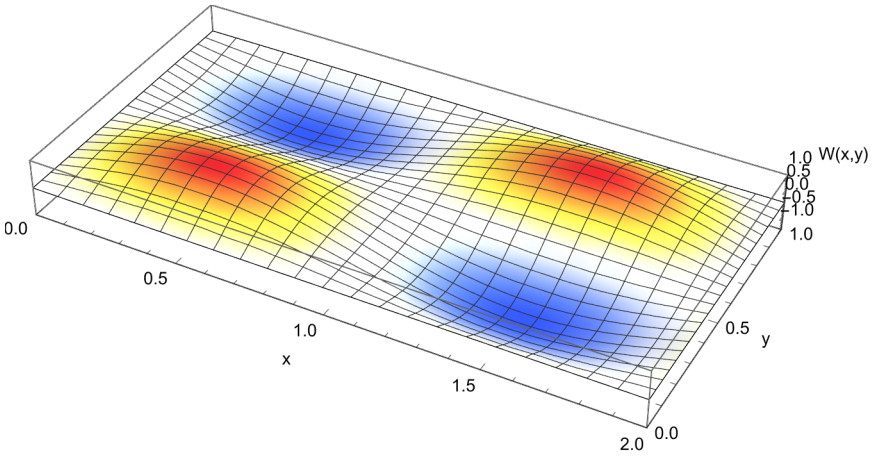
Out[48]=



In[49]:=
```
m = 2; n = 2;
ω[m_, n_] = π^2 * ((m / a)^2 + (n / b)^2) * Sqrt[d / (ρ * h)]
Plot3D[modeshape[m, n], {x, 0, a}, {y, 0, b}, AxesLabel → {"x", "y", "W(x,y)"},
 PlotRange → {{0, a}, {0, b}, All}, BoxRatios → {a, b, 0.2},
 Mesh → 21, ColorFunction → "Temperature", ImageSize → 450]
```

Out[50]=
```
1349.77
```

Out[51]=



In[52]:=
```
m = 3; n = 2;
ω[m_, n_] = π^2 * ((m / a)^2 + (n / b)^2) * Sqrt[d / (ρ * h)]
Plot3D[modeshape[m, n], {x, 0, a}, {y, 0, b}, AxesLabel → {"x", "y", "W(x,y)"},
 PlotRange → {{0, a}, {0, b}, All}, BoxRatios → {a, b, 0.2},
 Mesh → 21, ColorFunction → "Temperature", ImageSize → 450]
```

Out[53]=
```
1687.22
```

Out[54]=