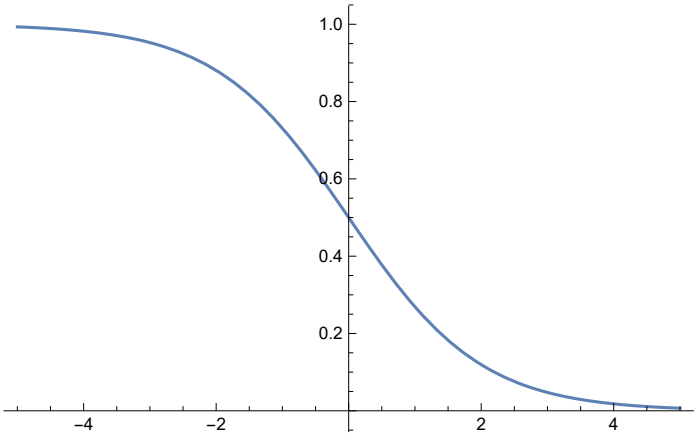
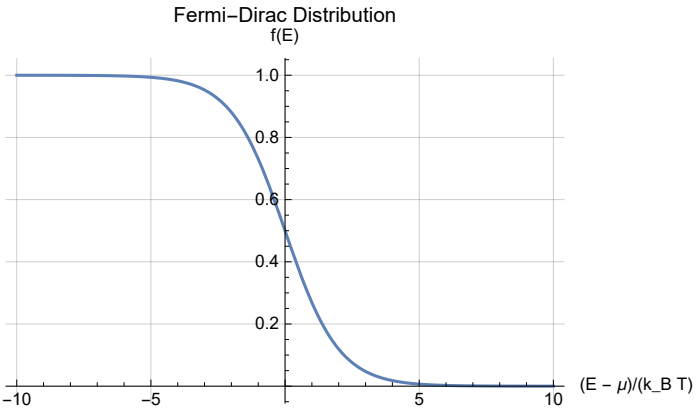
In[1]:=
```
F[x_] := 1 / (1 + Exp[x]);
Plot[F[x], {x, -5, 5}]
```

Out[2]=

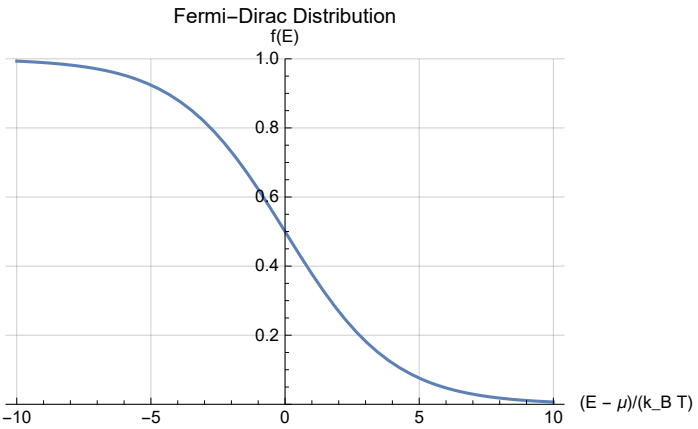


In[3]:=
```
Plot[1 / (1 + Exp[x]), {x, -10, 10}, AxesLabel → {"(E - μ) / (k_B T)", "f(E)"},
 PlotLabel → "Fermi-Dirac Distribution", GridLines → Automatic]
Plot[1 / (1 + Exp[x / 2]), {x, -10, 10}, PlotRange → {0, 1},
 AxesLabel → {"(E - μ) / (k_B T)", "f(E)"},
 PlotLabel → "Fermi-Dirac Distribution", GridLines → Automatic]
Plot[(1 / (1 + Exp[x])) - (1 / (1 + Exp[x / 2])), {x, -10, 10},
 AxesLabel → {"(E - μ) / (k_B T)", "f(E)"}, PlotLabel → "f1-f2", GridLines → Automatic]
```

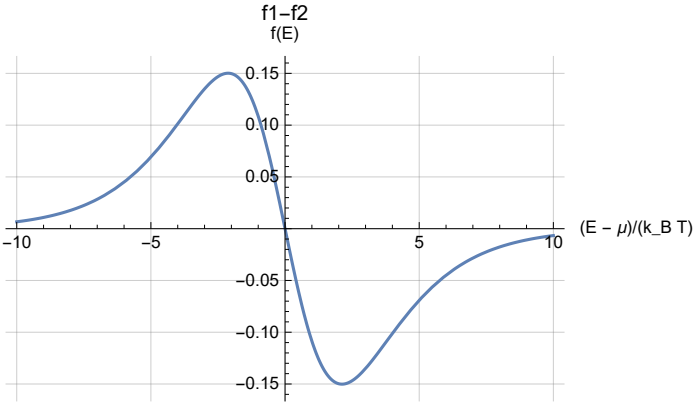
Out[3]=



Out[4]=

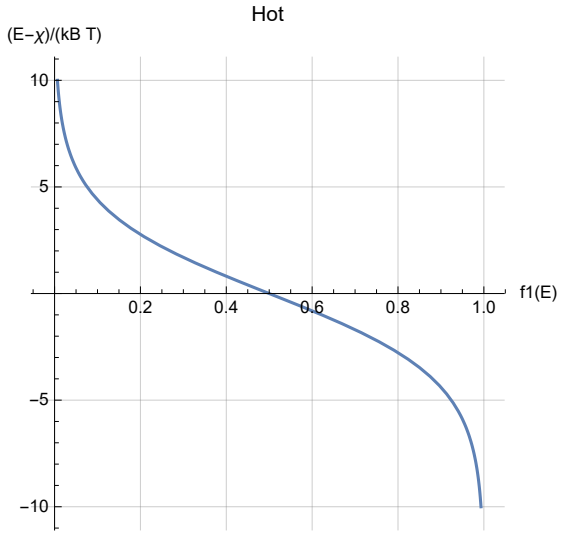


Out[5]=

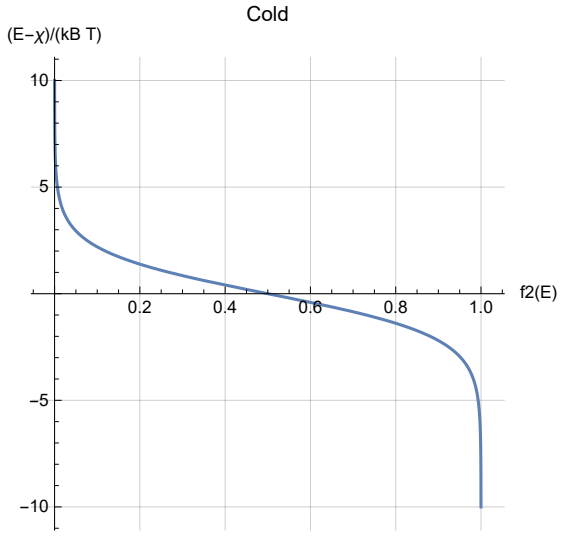


In[6]:=
```
ParametricPlot[{1 / (1 + Exp[x / 2]), x}, {x, -10, 10}, AspectRatio → 1,
 AxesLabel → {"f1(E)", "(E-χ) / (kB T)"}, PlotLabel → "Hot", GridLines → Automatic]
ParametricPlot[{1 / (1 + Exp[x]), x}, {x, -10, 10}, AspectRatio → 1,
 AxesLabel → {"f2(E)", "(E-χ) / (kB T)"}, PlotLabel → "Cold", GridLines → Automatic]
ParametricPlot[{(1 / (1 + Exp[x / 2])) - (1 / (1 + Exp[x])), x}, {x, -10, 10},
 AspectRatio → 1, AxesLabel → {"f1(E)-f2(E)", "(E-χ) / (kB T)"}, GridLines → Automatic]
```

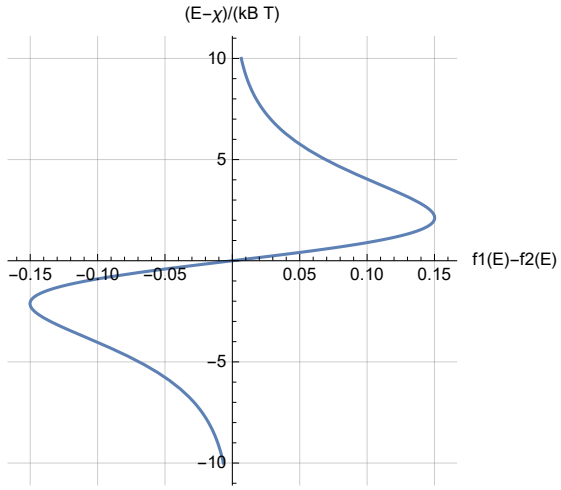
Out[6]=



Out[7]=



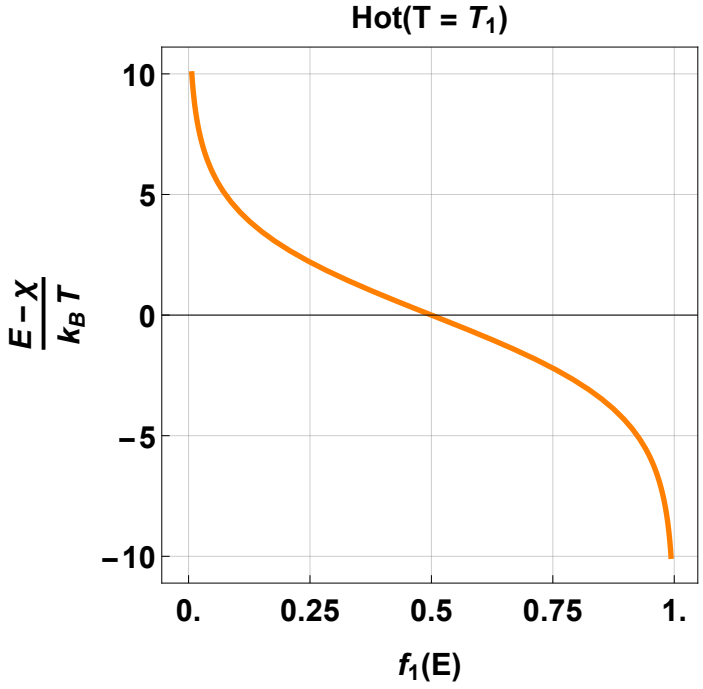
Out[8]=



In[9]:=

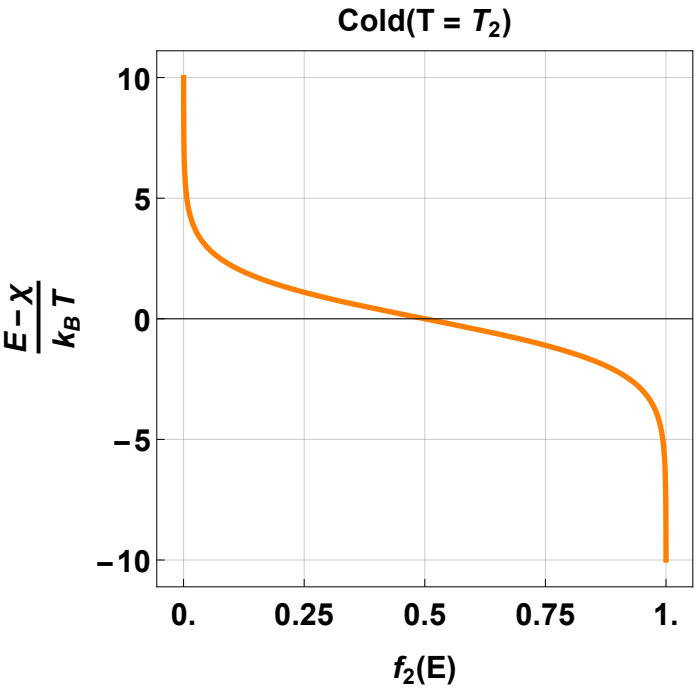
```
ParametricPlot[{1 / (1 + Exp[x / 2]), x}, {x, -10, 10}, AspectRatio → 1, Axes → True,
 GridLines → {{0.00, .25, 0.50, 0.75, 1.00}, {-10, -5, 0, 5, 10}}, PlotTheme → "Scientific",
 FrameLabel → {{HoldForm["(E - χ)/(k_B T)"], None}, {HoldForm["f_1(E)"], HoldForm["Hot(T = T_1)"]}},
 AxesStyle → Black, LabelStyle → {14, GrayLevel[0], Bold},
 FrameStyle → Directive[Black, 16],
 FrameTicks → {{{-10, -5, 0, 5, 10}, None}, {{0.00, .25, 0.50, 0.75, 1.00}, None}},
 PlotStyle → {Orange, Thickness[0.01]}]
```

Out[9]=



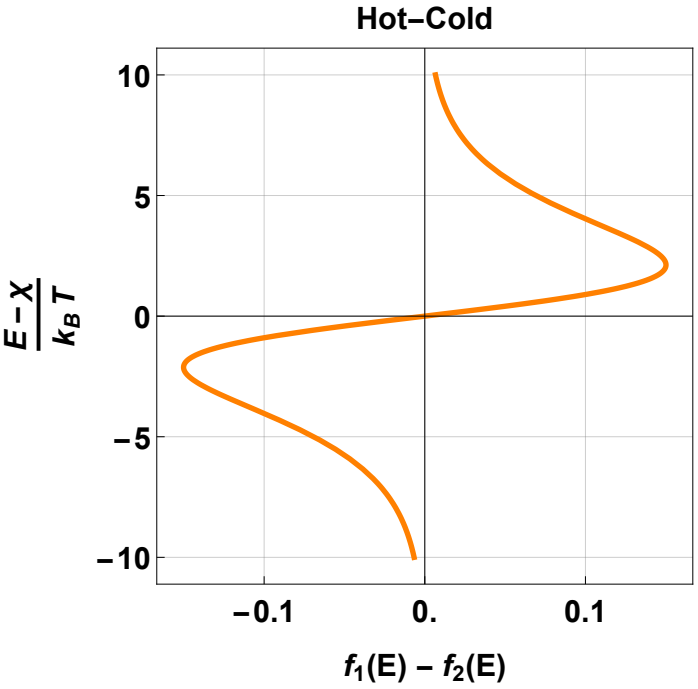
In[10]:=
```
ParametricPlot[{1 / (1 + Exp[x]), x}, {x, -10, 10}, AspectRatio → 1, Axes → True,
 GridLines → {{0.00, .25, 0.50, 0.75, 1.00}, {-10, -5, 0, 5, 10}}, PlotTheme → "Scientific",
 FrameLabel → {{HoldForm["(E - χ)/(k_B T)"], None}, {HoldForm["f_2(E)"], HoldForm["Cold(T = T_2)"]}},
 AxesStyle → Black, LabelStyle → {14, GrayLevel[0], Bold},
 FrameStyle → Directive[Black, 16],
 FrameTicks → {{{-10, -5, 0, 5, 10}, None}, {{0.00, .25, 0.50, 0.75, 1.00}, None}},
 PlotStyle → {Orange, Thickness[0.01]}]
```

Out[10]=



In[11]:=
```
ParametricPlot[{(1 / (1 + Exp[x / 2])) - (1 / (1 + Exp[x])), x},
 {x, -10, 10}, AspectRatio → 1, Axes → True,
 GridLines → {{-0.1, 0.0, 0.1}, {-10, -5, 0, 5, 10}}, PlotTheme → "Scientific", FrameLabel →
  {{HoldForm["(E - χ)/(k_B T)"], None}, {HoldForm["f_1(E) - f_2(E)"], HoldForm["Hot-Cold"]}},
 AxesStyle → Black, LabelStyle → {14, GrayLevel[0], Bold},
 FrameStyle → Directive[Black, 16],
 FrameTicks → {{{-10, -5, 0, 5, 10}, None}, {{-0.1, 0.0, 0.1}, None}},
 PlotStyle → {Orange, Thickness[0.01]}]
```

Out[11]=



In[12]:=