```
In[17]:= mc = (d - 2)/d;
         a = 2 d (1 - m)/m;
         b = 2 d (m - mc);

In[20]:= delta = 0.25;

In[21]:= Xint = Simplify[{- a/(2 Sqrt[b + 4]) (2 m)/((d + 2) m - d), (- a)/(b + 4) (2 m)/((d + 2) m - d)}];

In[22]:= F[m_, d_] :=
  Show[VectorPlot[{2 d (1 - m)/m y - 4 x, -2 d (m - (d - 2)/d) y}, {x, - (d (1 - m))/((d + 2) m - d) - delta,
      (d (1 - m))/((d + 2) m - d)}, {y, - (2 m)/((d + 2) m - d) - delta, (2 m)/((d + 2) m - d)}, VectorStyle → Brown],
   Plot[{- (2 m)/((d + 2) m - d) - 3 delta, (2 m)/((d + 2) m - d) + 2 delta},
    {x, - (d (1 - m))/((d + 2) m - d) - 3 delta, - (d (1 - m))/((d + 2) m - d)}, Filling → {1 → {2}}],
   Plot[{- (2 m)/((d + 2) m - d) - 3 delta, - (2 m)/((d + 2) m - d)},
    {x, - (d (1 - m))/((d + 2) m - d), (d (1 - m))/((d + 2) m - d) + 3 delta}, Filling → {1 → {2}}],
   ListLinePlot[{{{- (d (1 - m))/((d + 2) m - d), - (2 m)/((d + 2) m - d)},
      {(d (1 - m))/((d + 2) m - d) (1 + delta), (2 m)/((d + 2) m - d) (1 + delta)}}}, PlotStyle → Red],
   ListLinePlot[{{{- (d (1 - m))/((d + 2) m - d), (2 m)/((d + 2) m - d)}, {- (d (1 - m))/((d + 2) m - d), - (2 m)/((d + 2) m - d)},
      {(d (1 - m))/((d + 2) m - d) + 3 delta, - (2 m)/((d + 2) m - d)}}}, PlotStyle → Red],
   ListLinePlot[{{{0, (2 m)/((d + 2) m - d)}, {0, - (2 m)/((d + 2) m - d)}}}],
   ListLinePlot[{{{- (d (1 - m))/((d + 2) m - d) - 3 delta, 0}, {(d (1 - m))/((d + 2) m - d) + 3 delta, 0}}}],
   Plot[{(2 m)/((d + 2) m - d) ((1 + x/((2 m)/((d + 2) m - d)))^m - 1), (2 m)/((d + 2) m - d) + delta},
    {x, - (d (1 - m))/((d + 2) m - d), (d (1 - m))/((d + 2) m - d) + 3 delta}, Filling → {1 → {2}}],
   Plot[(2 m)/((d + 2) m - d) ((1 + x/((2 m)/((d + 2) m - d)))^m - 1),
```

$$\left\{x, -\frac{d\,(1-m)}{(d+2)\,m-d}, \frac{d\,(1-m)}{(d+2)\,m-d}+3\,\text{delta}\right\}, \text{PlotStyle}\to\text{Red}\Big],$$

$$\text{Plot}\Big[\Big\{-\frac{1}{d^2\,(-1+m)^2}\,m\left(2\,d\,(-1+m)\,x+\sqrt{2}\,m\sqrt{\left(-\left(\left(d^2\,(2+d\,(-1+m))\,(-1+m)^2\left(d^3\,(-1+m)^3\,x^2+16\,m^2\,x^2+4\,d\,m\left(-4+3\,m+m^2\right)x^2+2\,d^2\,(-1+m)^2\left(-1+2\,(1+m)\,x^2\right)\right)\right)\Big/\left((4+d\,(-1+m))\,m^2\,(d\,(-1+m)+2\,m)^2\right)\right)\right)}\right),$$

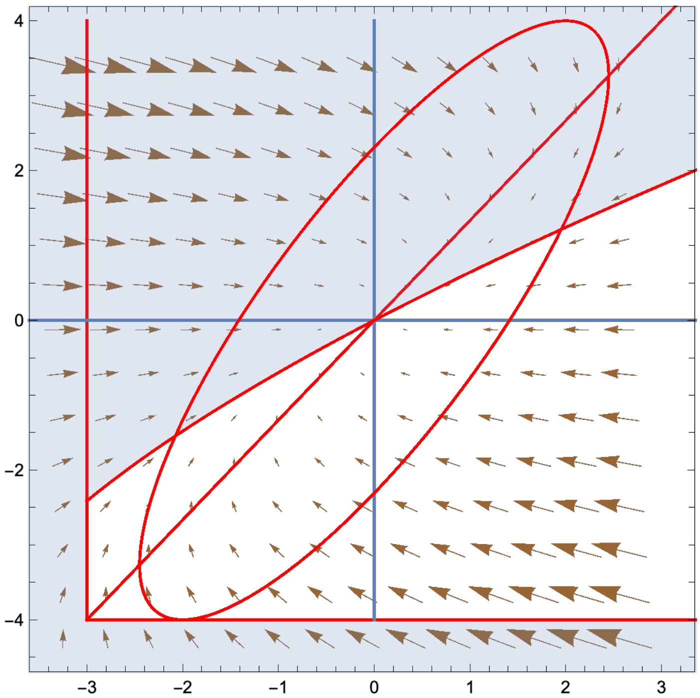
$$\frac{1}{d^2\,(-1+m)^2}\,m\left(-2\,d\,(-1+m)\,x+\sqrt{2}\,m\sqrt{\left(-\left(\left(d^2\,(2+d\,(-1+m))\,(-1+m)^2\left(d^3\,(-1+m)^3\,x^2+16\,m^2\,x^2+4\,d\,m\left(-4+3\,m+m^2\right)x^2+2\,d^2\,(-1+m)^2\left(-1+2\,(1+m)\,x^2\right)\right)\right)\Big/\left((4+d\,(-1+m))\,m^2\,(d\,(-1+m)+2\,m)^2\right)\right)\right)}\right)\Big\},$$

$$\left\{x, -\frac{d\,(1-m)}{(d+2)\,m-d}, \frac{d\,(1-m)}{(d+2)\,m-d}\right\}, \text{PlotStyle}\to\text{Red}\Big]\Big]$$

$$G[m\_, d\_] := \text{Show}\Big[F[m, d], \text{PlotRange}\to\Big\{\Big\{-\frac{d\,(1-m)}{(d+2)\,m-d}-\text{delta}, \frac{d\,(1-m)}{(d+2)\,m-d}\Big\}, \Big\{-\frac{2\,m}{(d+2)\,m-d}-\text{delta}, \frac{2\,m}{(d+2)\,m-d}-\text{delta}\Big\}\Big\}\Big]$$

In[24]:= G[2 / 3, 3]

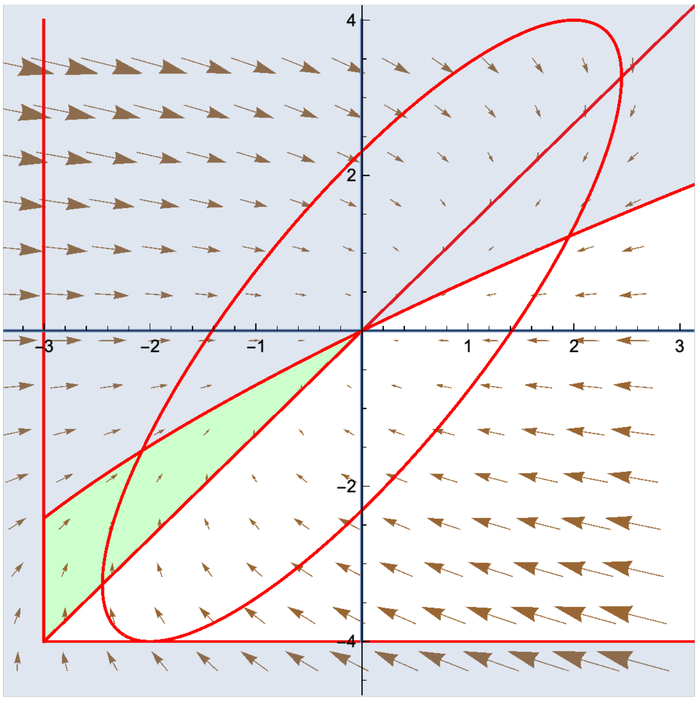
Out[24]=



In[25]:=

```
HA[m_, d_] := Show[Plot[{(2 m)/((d + 2) m - d) ((1 + x/((2 m)/((d+2) m-d)))^m - 1), (2 m)/(d (1 - m)) x},
    {x, -(d (1 - m))/((d + 2) m - d), 0}, Filling → {1 → {2}}, PlotStyle → Green],
   F[m, d], PlotRange → {{-(d (1 - m))/((d + 2) m - d) - delta, (d (1 - m))/((d + 2) m - d)},
     {-(2 m)/((d + 2) m - d) - delta, (2 m)/((d + 2) m - d) - delta}}, AspectRatio → 1]
HA[
 2 /
  3,
 3]
```

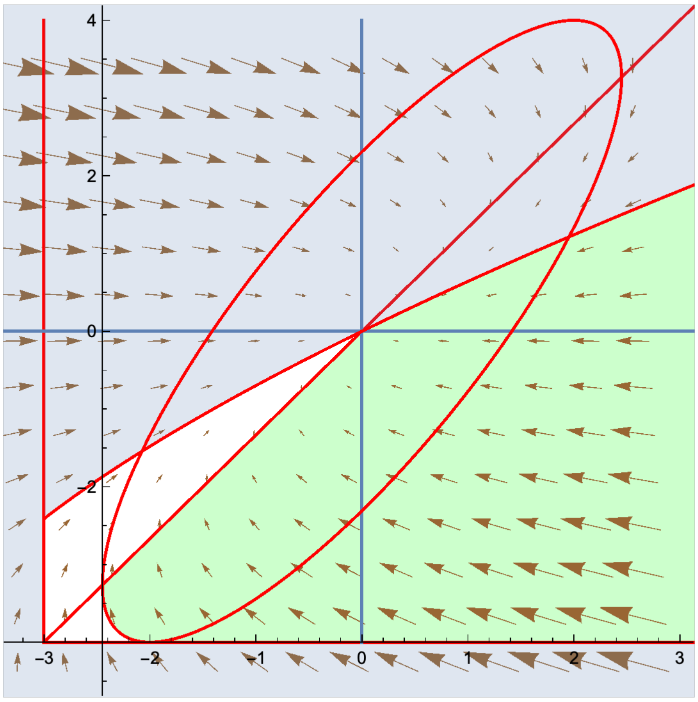
Out[26]=



In[27]:=
```
HB[m_, d_, x1_, x2_] :=
 Show[Plot[{-1/(d^2 (-1 + m)^2) m (2 d (-1 + m) x + Sqrt[2] m Sqrt[(-((d^2 (2 + d (-1 + m)) (-1 + m)^2
        (d^3 (-1 + m)^3 x^2 + 16 m^2 x^2 + 4 d m (-4 + 3 m + m^2) x^2 + 2 d^2 (-1 + m)^2
          (-1 + 2 (1 + m) x^2))) / ((4 + d (-1 + m)) m^2 (d (-1 + m) + 2 m)^2)))]),
    Min[(2 m)/((d + 2) m - d) ((1 + x/((2 m)/((d+2) m-d)))^m - 1), (2 m)/(d (1 - m)) x]}, {x, x1, x2},
   Filling -> {1 -> {2}}, PlotStyle -> Green],
  Plot[{-(2 m)/((d + 2) m - d), Min[(2 m)/((d + 2) m - d) ((1 + x/((2 m)/((d+2) m-d)))^m - 1), (2 m)/(d (1 - m)) x]},
   {x, x2, (d (1 - m))/((d + 2) m - d) + 3 delta},
   Filling -> {1 -> {2}},
   PlotStyle -> Green], F[m, d],
  PlotRange -> {{-(d (1 - m))/((d + 2) m - d) - delta, (d (1 - m))/((d + 2) m - d)},
    {-(2 m)/((d + 2) m - d) - delta, (2 m)/((d + 2) m - d) - delta}}, AspectRatio -> 1]
Simplify[Xint /. {m -> 2 / 3, d -> 3}]
HB[2 / 3, 3, %[[1]], %[[2]]]
```

Out[28]= $\{-\sqrt{6}, -2\}$

Out[29]=



In[30]:=
```
HC[m_, d_, x1_, x2_] := Show[
  Plot[{-2 m/((d + 2) m - d), 2 m/(d (1 - m)) x},
   {x, -d (1 - m)/((d + 2) m - d), x1}, Filling → {1 → {2}}, PlotStyle → Green],
  Plot[{-2 m/((d + 2) m - d), -1/(d^2 (-1 + m)^2) m
      (2 d (-1 + m) x + Sqrt[2] m √(-((d^2 (2 + d (-1 + m)) (-1 + m)^2 (d^3 (-1 + m)^3 x^2 + 16 m^2 x^2 +
               4 d m (-4 + 3 m + m^2) x^2 + 2 d^2 (-1 + m)^2 (-1 + 2 (1 + m) x^2))) /
           ((4 + d (-1 + m)) m^2 (d (-1 + m) + 2 m)^2))))},
   {x, x1, x2}, Filling → {1 → {2}}, PlotStyle → Green], F[
   m,
   d],
  PlotRange → {{-d (1 - m)/((d + 2) m - d) - delta, d (1 - m)/((d + 2) m - d)},
    {-2 m/((d + 2) m - d) - delta, 2 m/((d + 2) m - d) - delta}}, AspectRatio → 1]
Simplify[Xint /. {m → 2/3, d → 3}]
HC[2/3, 3, %[[1]], %[[2]]]
```

Out[31]= $\{-\sqrt{6}, -2\}$

Out[32]=