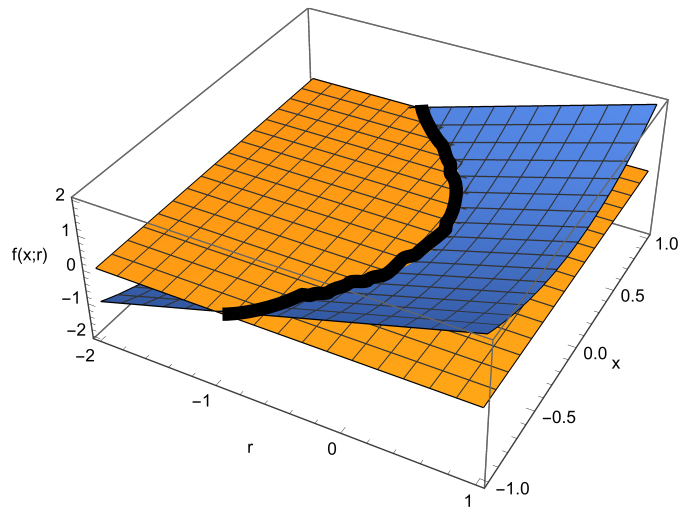
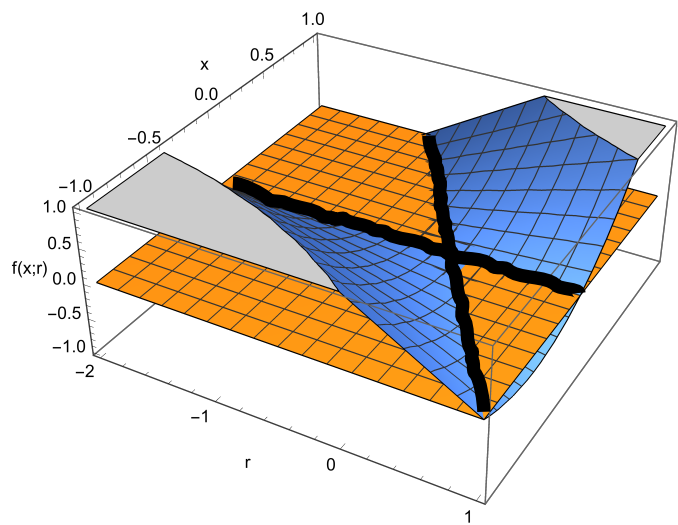


```
In[4]:= Plot3D[{0, r + x^2}, {r, -2, 1}, {x, -1, 1}, AxesLabel -> {"r", "x", "f(x;r)"}]
```



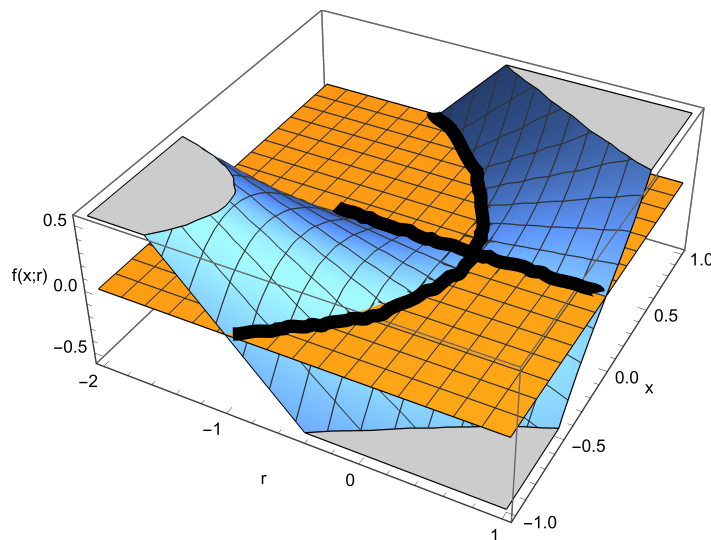
Saddle - node Bifurcation

```
In[5]:= Plot3D[{0, r * x + x^2}, {r, -2, 1}, {x, -1, 1}, AxesLabel -> {"r", "x", "f(x;r)"}]
```



Transcritical Bifurcation

```
In[8]:= Plot3D[{0, r * x + x^3}, {r, -2, 1}, {x, -1, 1}, AxesLabel -> {"r", "x", "f(x;r)"}]
```



Pitchfork Bifurcation

