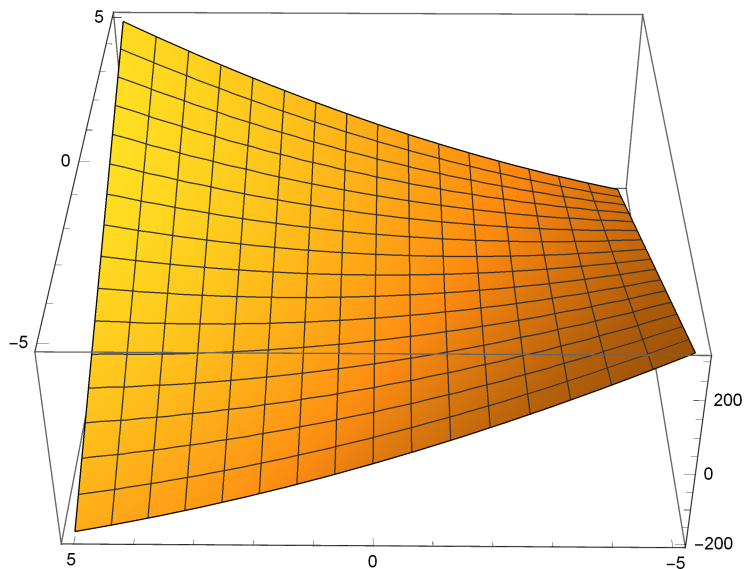# Pseudoinverse

3D Example

```
f[x1_, x2_] := 3 + 0.5 * x1 + 10 * x1 * x2 + 2 * x2^2
```

```
Plot3D[f[x1, x2], {x1, -5, 5}, {x2, -5, 5}]
```



```
samples = Flatten[Table[{x1, x2, f[x1, x2]}, {x1, -5, 5, 0.5}, {x2, -5, 5, 0.5}], 1];
```

```
SeedRandom[1337];
samplesNoise = (# + RandomReal[{-2, 2}]) & /@ samples;
```

```
(*Export[FileNameJoin[{NotebookDirectory[],"data3D.mat"}],
    {"data"→samplesNoise},"LabeledData"];*)
```

2D Example

The data in the file data2D.mat is generated according to the following function:

```
Plot[3 + Sin[x] + 0.5 * Log[x], {x, -3, 10}]
```