

Introduction to Flight Simulation (List 10)

Due: 4 jan 2011

1. Use the following data structures:

```
struct halfplane
{
    linalg::vector point;
    linalg::vector normal;
}

struct convobject
{
    std::vector< halfplane > planes;
};
```

Define the house of Paweł and Agnieszka as a convex object.

2. Write a function that determines whether a point is inside a convex object.

```
bool convobject::inside( linalg::vector point ) const;
```

3. Write a function that computes the corners of a convex object:

```
struct corner
{
    unsigned int s1;
    unsigned int s2;
    unsigned int s2;
    // The numbers of the surfaces that define the point.
    linalg::vector p;
    // The point itself.
};

std::vector< corner > convobject::getcorners( ) const;
```

```
// First compute all corners, then remove the corners  
// that are not in the object.
```

In order to write this, you need to be able to solve a three dimensional system of equations.

4. Write a function

```
convobject::isempty( ) const;
```

(You can use `getcorners()`.)