1. Log in to your Sage Cloud account.

   (a) Start the Chrome browser.
   (b) Go to http://cloud.sagemath.com and sign in.
   (c) You should see an existing Project for our class. Click on that.
   (d) Click “New”, call it h09, then click “Sage Worksheet”.

The degree of a vertex of a graph is the number of edges the vertex is adjacent to. The minimum degree of a graph is the minimum of the degrees of the graph (it is a graph invariant). Here is code to find the minimum degree:

```python
def min_degree(g):
    return min(g.degree())
```

A graph is Dirac if the minimum degree of the graph is at least half of the order of the graph (it is a graph property). Here is code to test if a graph is Dirac:

```python
def is_dirac(g):
    n = g.order()
    return min_degree(g) >= n/2
```

We can now investigate the probability that a random graph with order $n$ and edge probability $p$ is Dirac as we vary these parameters. This investigation will imitate the parallel investigation we did for graph connectivity (and which is recorded in the shared Sage eo7 worksheet).

2. Sketch a graph of the probability that a random graph is Dirac, for fixed edge probability $p = 0.75$ and with order $n$ varying from 2 to 100. Is there a critical value $n$ where the graphs go from being Dirac to not-Dirac? Investigate.

3. Sketch a graph of the probability that a random graph is Dirac, for fixed order $n = 100$ and with edge probability $p$ varying from 0 to 1. Is there a critical value $p$ where the graphs go from being not-Dirac to Dirac? Investigate.