

```
In[8]:= Needs["AGT`", FileNameJoin[{NotebookDirectory[], "agt.m"}]]
```

Pick out all regular graphs with certain properties from the named graph class "Regular", and produce a list of such graphs.

```
In[2]:= GraphNames = GraphData["Regular"];
LongGraphs = Map[GraphData, GraphNames];
ShortConnectedGraphs =
  Select[LongGraphs, (3 ≤ VertexCount[#] ≤ 10) && (ConnectedGraphQ[#]) &];
G = ShortConnectedGraphs;
```

Display a list of the SNFs of graphs with the following properties.

- Named
- Connected
- Nontrivial (as defined by TrivialSNFQ)
- Vertex count between 3 and 10 (inclusive)

Then shuffle and take the first 20

```
In[9]:= Normal /@
  Sort[
    RandomSample[
      SmithSeq /@
        Select[
          G,
            NonTrivialSNFQ
        ], 20],
    Length[#1] < Length[#2] &
  ] // Column
```

Out[9]=

```
{1, 1, 1, 1, 1, 145, 145, 0}
{1, 1, 1, 1, 1, 21, 168, 0}
{1, 1, 1, 1, 1, 1, 4, 12, 43 680, 0}
{1, 1, 1, 1, 1, 1, 1, 408, 816, 0}
{1, 1, 1, 1, 5, 5, 5, 5, 30, 0}
{1, 1, 1, 1, 1, 3, 3, 48, 816, 0}
{1, 1, 1, 1, 1, 1, 2, 2, 8880, 0}
{1, 1, 1, 1, 1, 1, 1, 319, 6380, 0}
{1, 1, 1, 1, 1, 1, 1, 11, 165, 0}
{1, 1, 1, 1, 1, 1, 1, 15, 2310, 0}
{1, 1, 1, 1, 1, 1, 2, 48, 336, 0}
{1, 1, 1, 1, 1, 1, 5, 5, 1110, 0}
{1, 1, 1, 1, 1, 1, 1, 23, 1380, 0}
{1, 1, 1, 1, 4, 8, 40, 40, 40, 0}
{1, 1, 1, 1, 1, 3, 15, 15, 60, 0}
{1, 1, 1, 1, 1, 1, 1, 15, 2460, 0}
{1, 1, 1, 1, 1, 1, 1, 7, 49 105, 0}
{1, 1, 1, 1, 1, 1, 1, 323, 6460, 0}
{1, 1, 1, 1, 1, 1, 1, 2, 173 130, 0}
{1, 1, 1, 1, 1, 1, 5, 35, 1995, 0}
```

```
In[10]:= Export[
  StringJoin[
    StringDrop[
      NotebookFileName[], -3], ".pdf"],
  EvaluationNotebook[]
];
```