

PackageProblemAnswers

May 25, 2017

0.1 LightGraphs Problem

```
In [ ]: using LightGraphs, Distributions
        function mkTree(maxdepth::Int = 10, p::Float64 = 0.8, g::SimpleGraph = Graph{Int, Edge{Int}}())
            if (maxdepth <= 1) g
            else
                b = Binomial(2, p)
                nEdges = max(1, rand(b))
                for leaves in 1:nEdges
                    add_vertex!(g)
                    newnode = nv(g)
                    add_edge!(g, currhead, newnode)
                    mkTree(maxdepth-1, p, g, newnode)
                end
            end
            g
        end
```

0.2 Rootfinding Problems

```
In [ ]: using Roots
        f(x) = 10 - x + e*sin(x)
        fzero(f, BigFloat(2.0))

In [ ]: f! = function (x, dx)
            dx[1] = x[1] + x[2] + x[3]^2 - 12
            dx[2] = x[1]^2 - x[2] + x[3] - 2
            dx[3] = 2x[1] - x[2]^2 + x[3] - 1
        end
        using NLSolve
        res = nlsolve(f!, [1.0; 1.0; 1.0])
        res.zero
        res = nlsolve(f!, [1.0; 1.0; 1.0], autodiff=true)
        res.zero
```