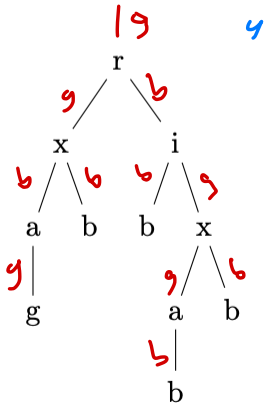
1 Finite State Tree Automata (FSTA)

Consider the following FSTA:

```
Sigma = {g, b, i, r, a, x}
Q = {g, b}
F = {g}
Delta = {
          ([g,g], i, g), ([g,b], i, b), ([b,g], i, b), ([b,b], i, b),
          ([g,g], r, g), ([g,b], r, g), ([b,g], r, g), ([b,b], r, b),
          ([g,g], x, b), ([g,b], x, g), ([b,g], x, g), ([b,b], x, g),
          ([g],   a, b), ([b],   a, g),
          ([],    g, g), ([],    b, b)
        }
```

Does the grammar above generate the following tree?



What does the grammar above remind you of? What is the treeset generated by the grammar?

Let M be the FSTA

```
([a, b], [T, F, P, M, C, D, Lt, If, 0, 1, 2, 3], [a, b], Delta)
```

where

```
Delta = {
          ([], T, b), ([], F, b),
          ([], 0, a), ([], 1, a), ([], 2, a), ([], 3, a),
          ([a, a], P, a), ([a, a], M, a),
          ([b, b], C, b), ([b, b], D, b),
          ([a, a], Lt, b),
          ([b, b, b], If, b), ([b, a, a], If, a)
        }
```

For each tree t below, determine whether $\text{under}_M\,(t)\,(a)$ is true and whether $\text{under}_M\,(t)\,(b)$ is true.