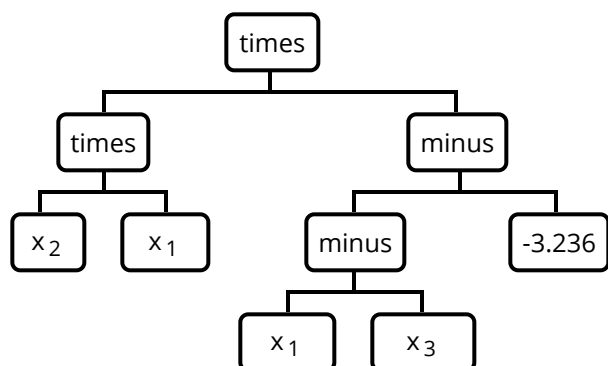# GPTIPS tree structure report

For best model on training data.

17-Apr-2019 23:25:33
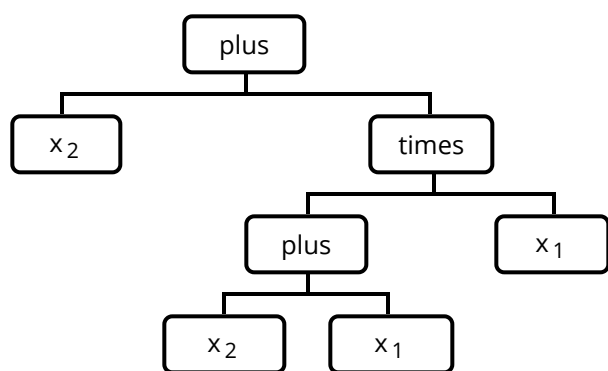
Tree 1

nodes = 9 depth = 4 complexity = 25
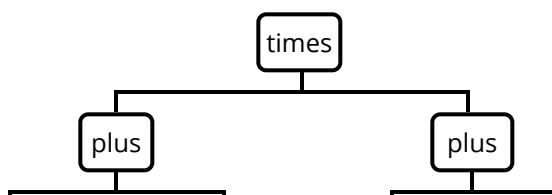
```
                    times
          ┌───────────┴───────────┐
        times                   minus
      ┌───┴───┐             ┌──────┴──────┐
     x₂      x₁          minus         -3.236
                       ┌───┴───┐
                      x₁      x₃
```
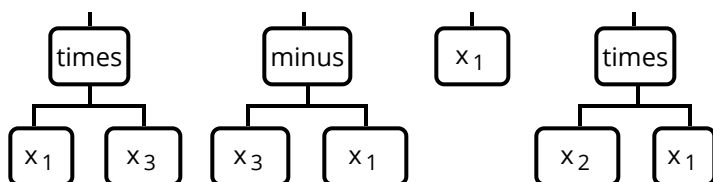
Tree structure:
- times
  - times
    - x_2
    - x_1
  - minus
    - minus
      - x_1
      - x_3
    - -3.236

Tree 2

nodes = 7 depth = 4 complexity = 19

Tree structure:
- plus
  - x_2
  - times
    - plus
      - x_2
      - x_1
    - x_1

Tree 3

nodes = 13 depth = 4 complexity = 41

Tree structure:
- times
  - plus
  - plus

```
    times            minus          x₁        times
   /     \          /     \                   /     \
  x₁      x₃      x₃       x₁              x₂      x₁
```

Tree 4

nodes = 11 depth = 4 complexity = 33

```
                 plus
              /        \
          minus        times
         /     \       /     \
     minus      x₁   plus      x₃
    /     \          /    \
   x₁      x₁      x₁      x₃
```
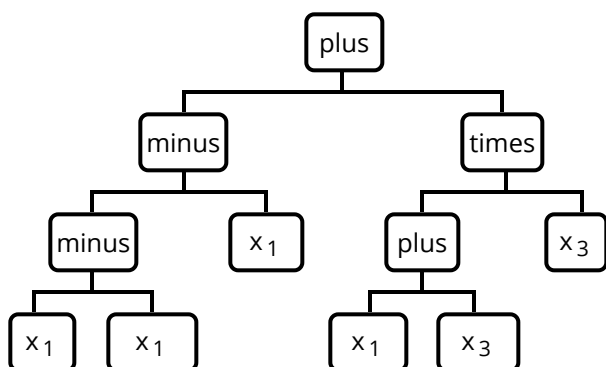
Tree 5

nodes = 9 depth = 4 complexity = 27

```
          plus
         /     \
       x₁      times
              /      \
          plus        minus
         /    \       /     \
       x₃      x₃   x₁       x₁
```

Tree 6

nodes = 15 depth = 4 complexity = 49

```
                    times
                 /         \
             times          minus
            /     \         /     \
        plus      minus  minus      times
```

Tree 7

nodes = 13 depth = 4 complexity = 41

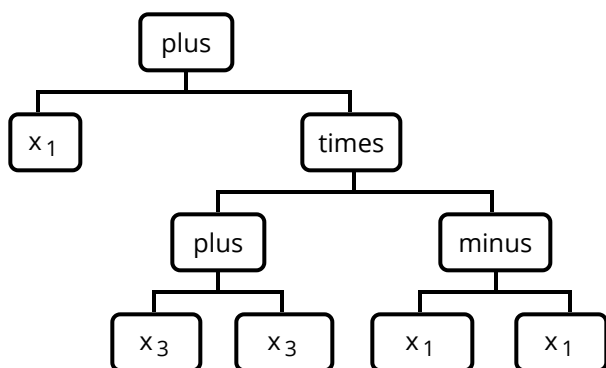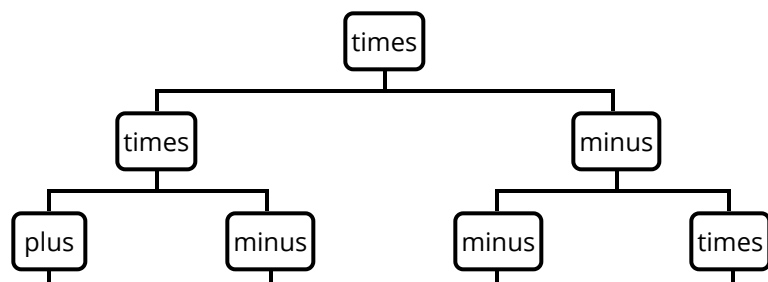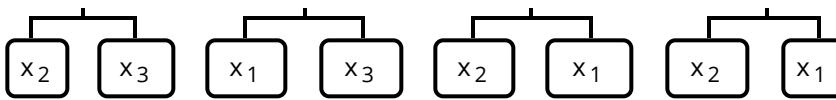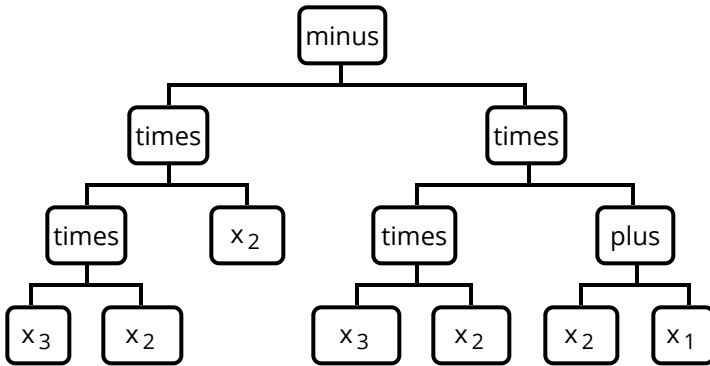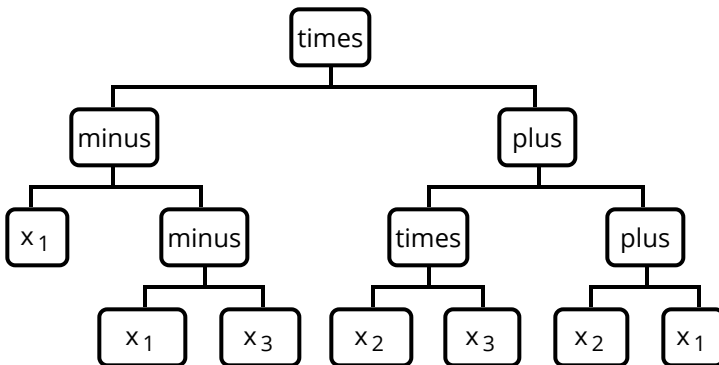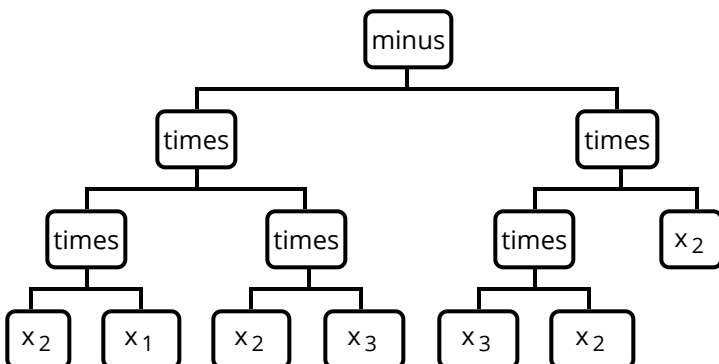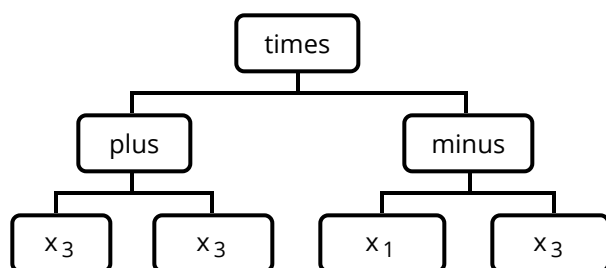### Tree 8

nodes = 13 depth = 4 complexity = 41

Tree 9

nodes = 13 depth = 4 complexity = 41
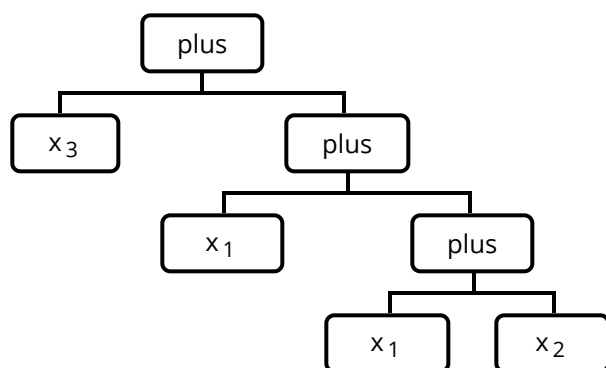
Tree 10

nodes = 7 depth = 3 complexity = 17

```
            times
        ┌─────┴─────┐
      plus        minus
     ┌──┴──┐      ┌──┴──┐
    x₃    x₃     x₁    x₃
```

$$
\begin{array}{c}
\text{times} \\
\swarrow \qquad \searrow \\
\text{plus} \qquad \text{minus} \\
x_3 \quad x_3 \qquad x_1 \quad x_3
\end{array}
$$

Tree 11

nodes = 7 depth = 4 complexity = 19

$$
\begin{array}{c}
\text{plus} \\
\swarrow \qquad \searrow \\
x_3 \qquad \text{plus} \\
\swarrow \quad \searrow \\
x_1 \qquad \text{plus} \\
\swarrow \quad \searrow \\
x_1 \quad x_2
\end{array}
$$

GPTIPS - the symbolic data mining platform for MATLAB

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