

Math 322

Q's

10.1 (1c, 3)

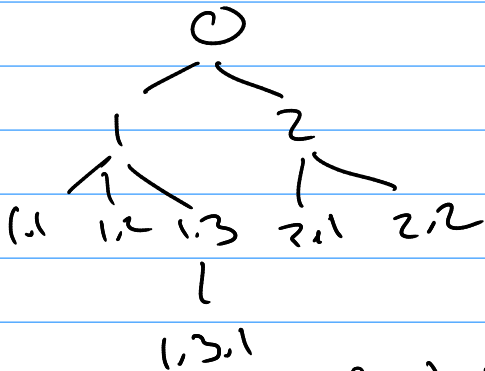
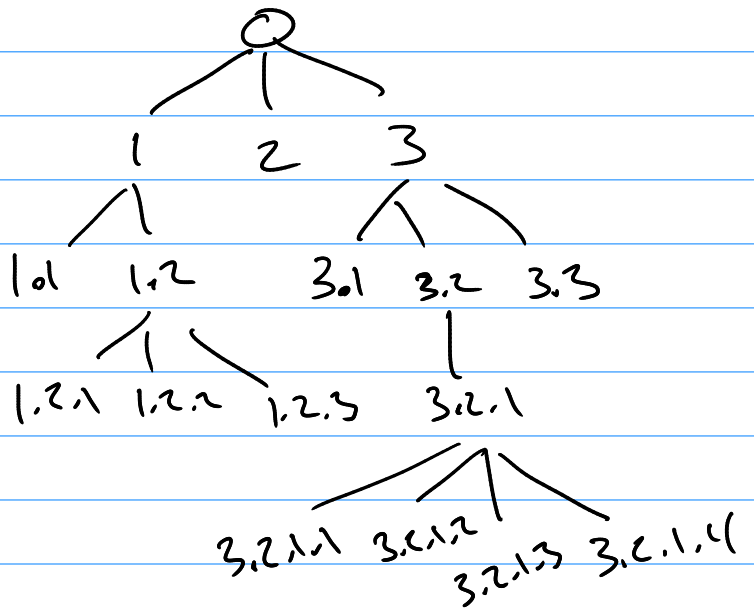
10.2 (4ac)

10.3 / 10.4

My Own Homework

→ decision trees / game tree / pre-fix
in-fix
post-fix

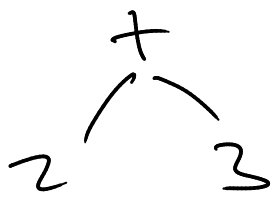
Tree Traversals



Pre-order: 0, 1, 1.1, 1.2, 1.3, 1.3.1, 2, 2.1, 2.2

Post-order: 1.1, 1.2, 1.3.1, 1.3, 1, 2.1, 2.2, 2, 0

In-order: ((1.1), 1, ((1.2), (1.3.1, 1.3))), 0, (2.1, 2, 2.2)



Preorder

$+, 2, 3$

Post

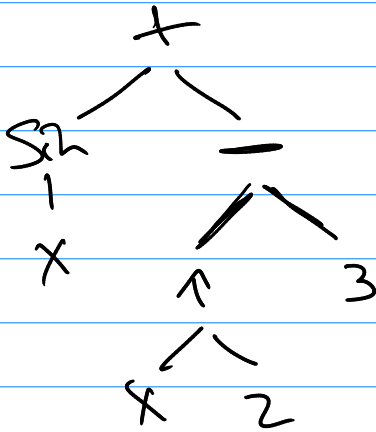
$2, 3, +$

Inorder

$2, +, 3$

$$\sin(x) + (x^2 - 3)$$

\tilde{x} is $x \uparrow 2$



Prefix: $+, \sin, x, -, \uparrow, x, 2, 3$

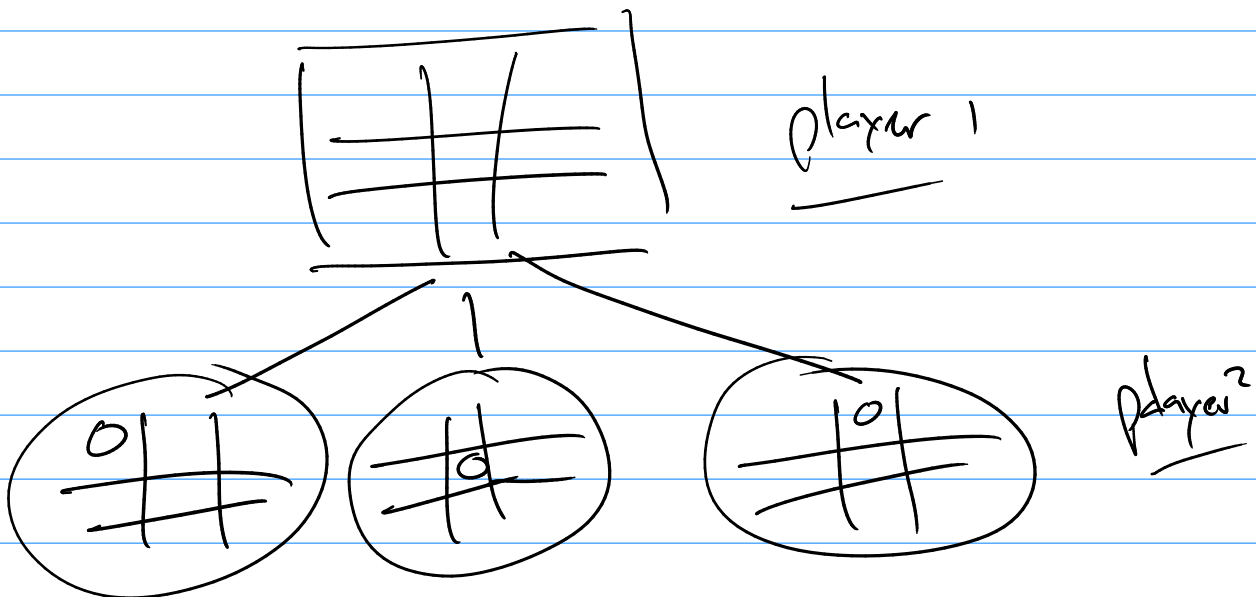
Postfix: $x, \sin, x, 2, \uparrow, 3, -, +$

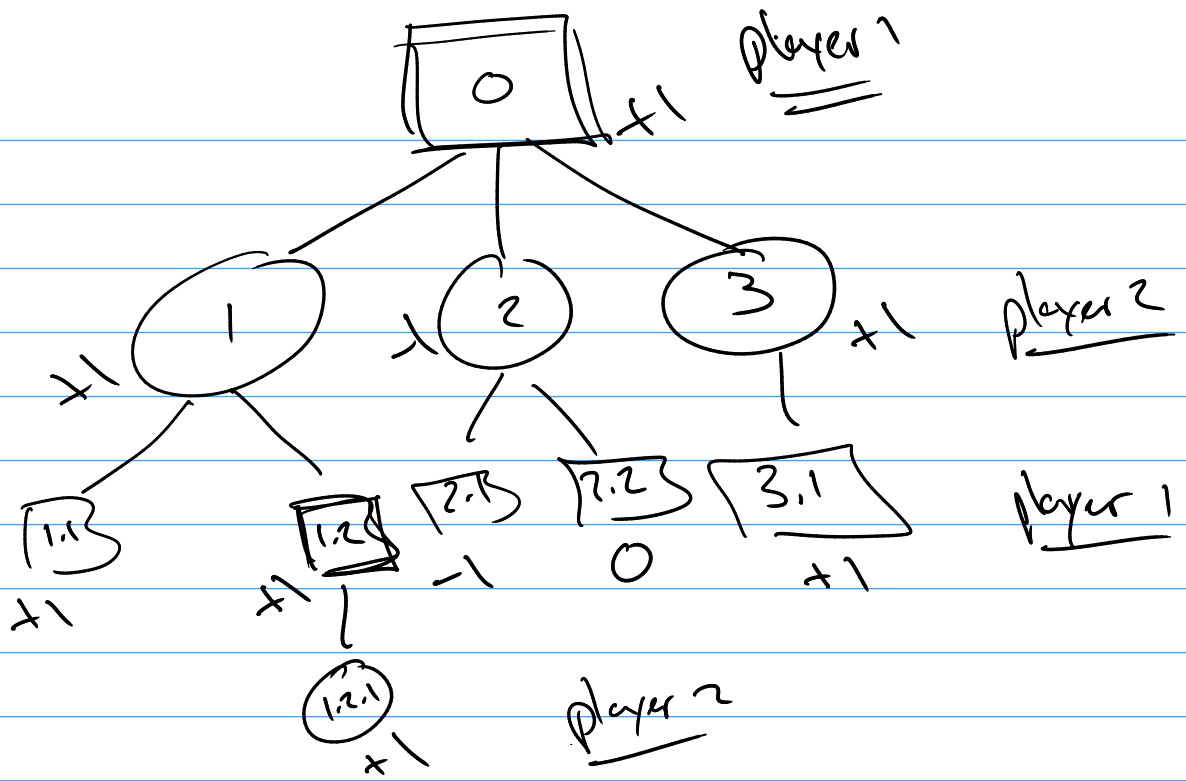
Infix: $(x, \sin), +, (x, \uparrow, 2), -, (3)$

Game trees: ① are decision trees

② label all vertices as a value to player #1

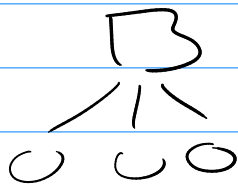
(ex)





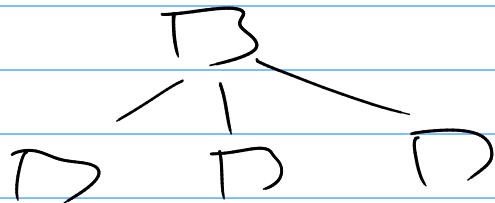
Chess (Square) → Entire tree

~ 20-54



K, Q, h, h₂, k, k₂, f, f₂
 P P P P P P P P

n=1 move 20
 n=2 20²
 n=3 20³
 n=4 20⁴



Boolean Algebra

Math = toys \oplus rules

Axiomatic Method

Basis Things

- undefined objects

- Axioms / Postulates \leftarrow just true statements

Inductive things

\hookrightarrow Make "new" toys

Research

Proofs lemma
defined terms

Axiomatic Method

truths, undefined terms

Boolean Algebra

$$B = \{ b_0, b_1, \overline{\quad} \}$$

Operations:

1 unary
2 binary

(neg) \overline{x}

$x \wedge y$, $x \vee y$

meet

join

Identity laws

$$x \wedge b_0 = x$$

$$x \vee b_1 = x$$

Complement laws

$$x \vee \overline{x} = b_1$$

$$x \wedge \overline{x} = b_0$$

etc