Lower bound

x<=8
 -2 - x   -10

→

x<=8
 -1   -x*x+20*x-97

→

Upper bound

x>-8
 2 - x   10

→

x>-8
 -1   -x*x-20*x-97

→

x>-8
 x<=8   x<=8
 x*x+20*x+96   -x*x-20*x-96   x>=0
 -1   -x*x+20*x-97   -1   -x*x-20*x-97   -x*x+20*x-97

Maximum of UB and LB

Function Root

- x   →   3

**Compute Bounds
on action y**

**Substitute bounds in function value
(leaf) in place of action**
*3 + (-1 * a * a) + (-1 * x * x) + (-2 * a * x)*

x>=-10
 x<10
 3   0

**Root with constraints
LB<=root <=UB**

→

Linearize Decision

→

Add independent Decisions

→

x<=2
 x<=-12
 x<=8   0
 3   x<=10
 3   x>=-11.7
 0   -97 +20*x - x*x

Maximum of UB/LB with root