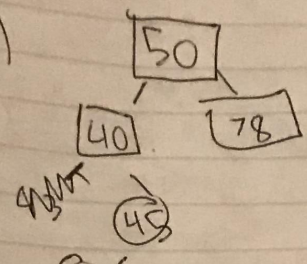
I Pledge My honor that I have abided by the Stevens Honor System. Zachary Talarick

Zachary Talarick HW5

1)

a)



○ = red

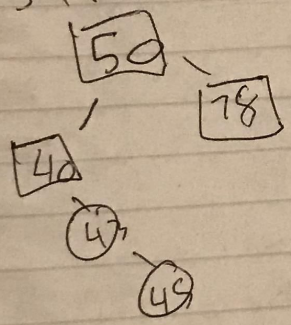
□ = Black

b) Node 0045 is red, it's child 0043 is red

Case 2b

TO Fix

- z = P[z]
- rightrotate(z)

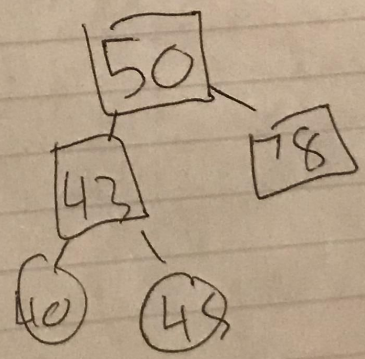


c) Node 43 is red and its child 45 is red

Case 3b

TO Fix:

- z.color = black
- z's Parent.color = red
- left Rotate(z's parent)



2. a. 50

b. [50, 76]

c. 50
/ \
23 76

d. 50
/ \
[21, 23] 76

e. [21, 50]
/ | \
20 23 76

f. [21, 50]
/ | \
[19, 20] 23 76

g. 21
/ \
19 50
/ \ / \
18 20 23 76

3. LCM(A[1..n])

for num in A: (from 1 ... n)
result = (A[num] · result) /
gcd(A[num], result)

return result

4. a. (((4x + 5)x − 2)x − 4)x + 7

b. ~~[illegible]~~ [4, 5, −2, −4, 7]

c.

x	p	n	i
2	4	4	
	13	3	
	24	0	
	44	1	
	95	0	

p(2) = 95

d.

2	4	5	−2	−4	7
	8	26	48	88	
4	13	24	44	~~95~~ 175	

5. Left Right Binary Exponentiation(a, b(n));
result = a
for i from ~~n-1~~ I-1 to 0:
result *= result
if $b_i = 1$:
result *= a
if $b_i = 0$:
result = 1
return result