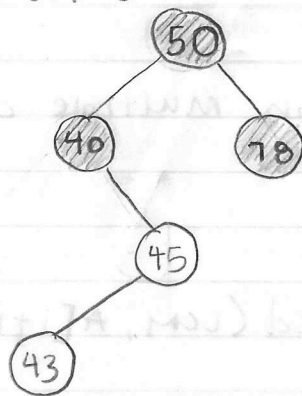


Katie Prescott

I pledge my honor that I have abided by the Stevens honor system.

Homework 5

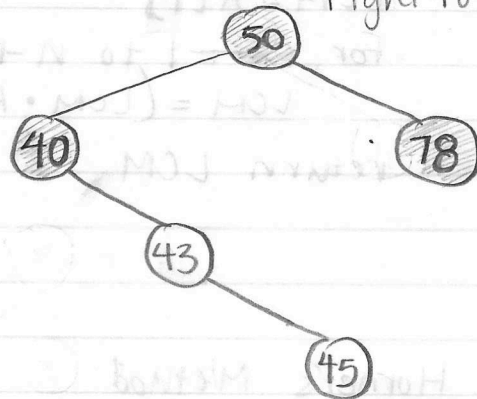
1. a.



b. Which property is violated: Property 4
case after insertion: 2b

Steps taken: $43 = p[43]$

right-rotate(43)



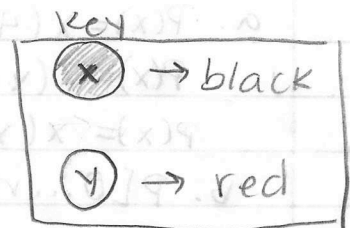
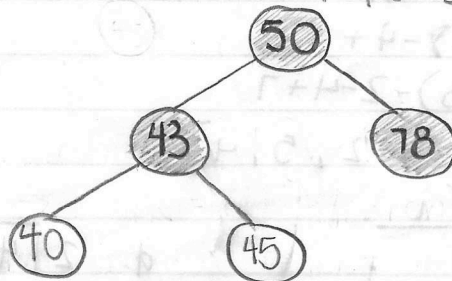
c. Which property? 4

case: 3b

Steps: $p[45].color = black$

$p[p[45]].color = red$

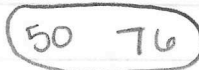
left-rotate($p[p[45]]$)



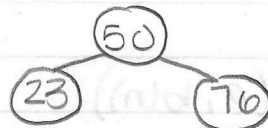
2. a. i50



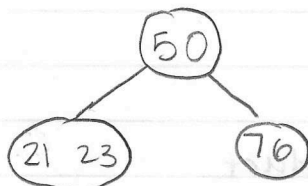
b. i76



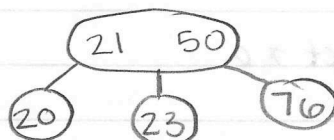
c. i23



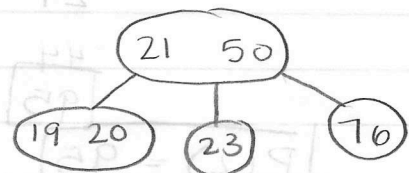
d. i21



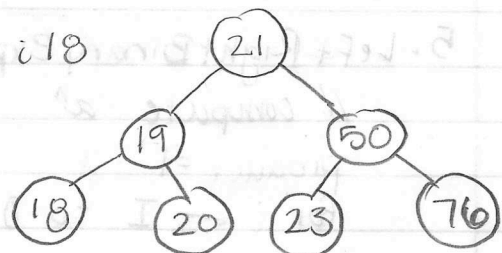
e. i20



f. i19



g. i18



3. LCM($A[1 \dots n]$):

// computes the least common multiple of all
// the integer in array A

LCM = $A[1]$

For $i \leftarrow 1$ to $n-1$, do:

LCM = $(LCM \cdot A[i+1]) / \gcd(LCM, A[i+1])$

return LCM

4. Horner's Method:

$$P(x) = 4x^4 + 5x^3 - 2x^2 - 4x + 7$$

a. $P(x) = x(4x^3 + 5x^2 - 2x - 4) + 7$

$P(x) = x(x(4x^2 + 5x - 2) - 4) + 7$

$P(x) = x(x(x(4x + 5) - 2) - 4) + 7$

b. $P[0 \dots n] = [7, -4, -2, 5, 4]$

c.

X	P	n	i
2	4	4	

13 3

24 2

44 1

95 0

$P(2) = 95$

d.

	4	5	-2	-4	7
↓	8	26	48	88	
	4	13	24	44	95

5. Left Right Binary Exponentiation($a, b(n)$)

// compute a^n

product = 1

for $i \leftarrow 1$ to 0, do:

product = product * product

if ($b_i == 1$)

product = product * a

return product.