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Assignment 4

Problem 1: Here is the solution for problem 1.

1.

$13n^2 - 2n + 56$
$13n^2 - 2n$ *Rule* 3 (*in sum drop the smaller term*)
$\theta = n^2$ *Rule* 3 (*in sum drop the smaller term*)

2.

$2.5logn + 2$
$2.5logn$ *Rule* 3 (*in sum drop the smaller term*)
$\theta = logn$ *Rule* 2 (*drop the multiplicative constant*)

3.

$n(12 + logn)$
$12n + nlogn$ *Multiplying* (n) *through*
$\theta = nlogn$ *Rule* (*in sum drop the smaller term*)

4.

$1 + 2 + 3 + ... + n$
$Sn = 1 + 2 + 3 + ...(n-1) + n$
$Sn = n + (n-1) + (n-2) + ...(2) + 1$
$- -$ *Adding both lines*
$2Sn = (n+1) + (n+1) + (n+1) + (n+1) + (n+1)$ *nterms*
$2Sn = n(n+1)$
$2Sn/2 = n(n+1)/2$
$Sn = n(n+1)/2$
$Sn = (n^2 + n)/2$
$Sn = (1/2) * (n^2 + n)$
$2 * Sn = (n^2 + n)$
$Sn = 2n^2 + 2n$
$Sn = n^2$ *Rule* 3 (*drop smaller term in a sum*) *and drop the constant multiplier*
$\theta = n^2$

5.

$log(n^2) + 10$
$log(n^2)$ *Rule* 3 (*in sum drop smaller term*)
$2logn$ *using property of log can bring*
exponent $logn$
$\theta = logn$ *Constant in product can be eliminated*

6.

$log(n^2) + nlogn$
$2logn + nlogn$ *by using log property can*
bring exponent in front of $logn$
$logn + nlogn$ *constant term can be dropped*
$\theta = nlogn$ *Rule* 3 (*in sum smallest*
term can be dropped) $logn < nlogn$

Problem 2: Here is the solution for problem 2.

1.

Evaluate the postfix expression
$10\,3\,4\,-\,5\,*\,/$
The first operator we run into is minus, so we subtract 4 *from* 3, *so*
$10\,-1\,5\,*\,/$
The next operator we run into is $*$ *so we multiply* $-1 * 5$
$10\,-5\,/$
The last operator is / *so we divide* 10 *and* -5
-2

2.

Infix to postfix expression
$(((2 + 3) * 5) - 15)$
The first operation we will do is addition
$2\,3+$
The next operation is multiplying by 5
$2\,3\,+\,5*$
The last operation is subtracting 15
$2\,3\,+\,5*\,15-$

Problem 2: Here is the solution for problem 2.....

Problem 3: Here is the solution for problem 3. ...

Problem 4: Here is the solution for problem 4. ...