

Math 105 TOPICS IN MATHEMATICS
SOLUTION FOR REGULAR HOMEWORK – II (01/28)

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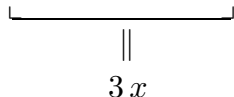
[I] (6pts) $3 + 65537 - 65537 = 3.$

[II] (6pts) $2a + 2b + 2c + 2d = 2 \left(\boxed{a + b + c + d} \right).$

[III] (6pts) Solve $x = 135 - 2x.$

[Solution]: Drag the term $2x$ to the other side.

$$x = 135 - \boxed{2x}$$


$$\Rightarrow \boxed{2x} + x = 135$$

$$3x$$

$$\Rightarrow 3x = 135$$

$$\Rightarrow x = \frac{135}{3} = 45.$$

[IV] (12pts) (a) $1 + \underbrace{3}_{\substack{\parallel \\ 1+2}} + \underbrace{6}_{\substack{\parallel \\ 1+2+3}} + \underbrace{10}_{\substack{\parallel \\ 1+2+3+4}} + \cdots + \underbrace{300}_{\substack{\parallel \\ 1+2+3+4+\cdots+24}}$

$$\begin{aligned}
 &= \frac{1}{6} \cdot 24 \cdot 25 \cdot 26 \\
 &= 4 \cdot 25 \cdot 26 \\
 &= 100 \cdot 26 = 2600.
 \end{aligned}$$

(b)

$$\begin{aligned}
 &1 \\
 &+ 1 + 2 \\
 &+ 1 + 2 + 3 \\
 &+ 1 + 2 + 3 + 4 \\
 &+ 1 + 2 + 3 + 4 + 5 \\
 &\vdots \\
 &+ 1 + 2 + 3 + 4 + 5 + \cdots + 199 \\
 &+ 1 + 2 + 3 + 4 + 5 + \cdots + 199 + 200
 \end{aligned}$$

$$\begin{aligned}
 &= \frac{1}{6} \cdot 200 \cdot 201 \cdot 202 \\
 &= \frac{200 \cdot 201 \cdot 202}{2 \cdot 3} \\
 &= 100 \cdot 67 \cdot 202 \\
 &= 100 \cdot 13534 = 1353400.
 \end{aligned}$$