question 5

Wrong Answer

p	q	r	$p \to q$ (2)	(2) $\to R$	$P \wedge \neg Q$ (3)	(3) $\vee R$
1	1	1	1	1	0	1
1	1	0	1	0	0	0
1	0	1	0	1	1	1
0	0	0	0	0	0	0
0	1	1	1	1	0	1
0	1	0	1	0	0	0

Correct Table

p	q	r	$p \to q$ (2)	(2) $\to R$	$P \wedge \neg Q$ (3)	(3) $\vee R$
1	1	1	1	1	0	1
1	1	0	1	0	0	0
1	0	1	0	1	1	1
1	0	0	0	1	1	1
0	1	1	1	1	0	1
0	1	0	1	0	0	0
0	0	1	1	1	0	1
0	0	0	1	0	0	0

Columns 5 and 7 are identical so they are logically equivalent. Also working with tables in Latex can be tricky

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Question 8a:
$\sum_{j=3}^{6}(5j^2 + (-1)^j) = \sum_{j=3}^{6}(5j^2) + \sum_{j=3}^{6}(-1)^j = (15^2 + 20^2 + 30^2) + \sum_{j=0}^{6}(-1)^j - \sum_{j=0}^{2}(-1)^j$
$= (15^2 + 20^2 + 30^2) + (\frac{(-1)^7-1}{-1-1}) - (\frac{(-1)^3-1}{-1-1})$

8a. correction:
I messed up the first sum and mutliplied first then squared.. and forgot j=6 in the sum $\sum_{j=3}^{6} 5j^2$
$5 * (3^2 + 4^2 + 5^2 + 6^2) + (\frac{(-1)^7-1}{-1-1}) - (\frac{(-1)^3-1}{-1-1}) = 430+(0\text{-}0) = 430$

Question 8b:
$\sum_{i=0}^{8}(2^{i+1} - 3) = \sum_{i=0}^{8} 2^{i+1} - 8 * 3 = 2 * \sum_{i=0}^{8} 2^i - 8 * 3$
$= 2 * \frac{2^9-1}{2-1} - 24 = 998$

8b. correction
I forgot to include i=0 on the sum: $\sum_{i=0}^{8} 3$ making it off by 3 so the answer should have been :
$2 * \frac{2^9-1}{2-1} - 27 = 995$