

EC 330 HW #1

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Professor Madrik
EC 330 2:00PM - 4:00PM

$$\left(\frac{1}{8}\right)^2 \sum_{i=1}^{n=27} \left(\frac{1}{8}\right)^i \quad \text{b/c} \quad \left(\frac{1}{8}\right)^2 \left[\frac{1}{8} + \left(\frac{1}{8}\right)^2 + \dots + \left(\frac{1}{8}\right)^{27} \right]$$

1.)
② correct
method?
How would
you do
set $i=0$
and $i+1$
method

a) $\sum_{i=0}^{n=20} \left(\frac{1}{8}\right)^i = \left(\frac{1}{8}\right)^2 \sum_{i=0}^{n=20} \left(\frac{1}{8}\right)^i = \sum_{i=0}^{n=20} \left(\frac{1}{8}\right)^i - \sum_{i=0}^{n=20} \left(\frac{1}{8}\right)^i$
 b) $\sum_{i=0}^{n=20} \frac{1}{7^i} = 9 \sum_{i=0}^{n=20} \frac{1}{7^i} = \frac{1}{7} \left[\frac{1 - \left(\frac{1}{7}\right)^{21}}{1 - \frac{1}{7}} \right] = \frac{1}{7} \left[\frac{1 - \left(\frac{1}{7}\right)^{21}}{\frac{6}{7}} \right] = \frac{1}{6} \left[1 - \left(\frac{1}{7}\right)^{21} \right] \approx \frac{1}{6} \approx 0.1667$
 $= 9 \left(\frac{1}{7} \right) = \frac{9}{7} \approx 1.2857$

Let $i=0$
and $i+1$
method
b/c n unit
in geometric
eqn.

c) $\sum_{i=1}^N 6i^2 + 3i - 9$
 $= 6 \sum_{i=1}^N i^2 + 3 \sum_{i=1}^N i - \sum_{i=1}^N 9$
 $= 6 \left(\frac{N(N+1)(2N+1)}{6} \right) + 3 \left(\frac{N(N+1)}{2} \right) - 9N$

① 1) 6)
infinitely
gon

b/c k is not
totally on
 $\frac{1}{2}$ but it's
on 7 index
& hence it's
within the
same effect

② this is $= \ln(280) + O(1)$
 correct $= 5.63$
 $\sum_{i=1}^{280} \frac{1}{i} = \sum_{i=1}^{280} \frac{1}{i+7}$
 $= \ln(280) - \ln(7) + O(1) + O(1)$
 $= \ln(40) + O(1)$

diff. b/c
 $\sum_{k=0}^{\infty} kx^k + \sum_{k=0}^{\infty} x^k$
 $= \frac{x}{1-x} + \frac{1}{1-x}$

diff. var written wrong
 $\sum_{k=0}^{\infty} kx^k + \sum_{k=0}^{\infty} x^k$ both diff, but both $|x| < 1$
 $\sum_{k=0}^{\infty} \frac{1}{3^k} = \sum_{k=0}^{\infty} \left(\frac{1}{3}\right)^k = \frac{1}{1 - \frac{1}{3}} = \frac{3}{2} = 1.5$

2.)

a) $\sum_{i=21}^{n=72} k = \sum_{i=1}^{n=72} k - \sum_{i=1}^{n=20} k$
 $= \frac{72(73)}{2} - \frac{20(21)}{2}$
 $= 2418$

b.) $\log_{24} (76)^3 = 3 \log_{24} 76 = 3 \frac{\log 76}{\log 24} = 4.09$

Δ basic rule $\log_a b = x \Rightarrow a^x = b$

Why (c) $32^{\log_{12} 41} = 841$ $\log_a b = x \Rightarrow a^x = b$

is my d) $\log_{49} ((7x)^7)$

answer $= 7 \log_{49} 7x$
 correct? $= 7 \left(\frac{\log(7x)}{\log(49)} \right)$

for (c)?

① discover

② 3^N e.g.

or $N=3$

$$\sum_{i=1}^{3^N} \log_{3^4} i = \log_{3^4} (3^N!)$$

on sub
function

* 3.)

dec. group

size (w/o

repl.) and

order a group,

divided by

3! elim

dependence

on order matters

say $(ABC = BAC)$

① beyond one

prob. calculation

(indicated) by

multiplication

Does

multiplication

translate to

logical and?

b) odd # $h = 2k+1$ | k is an integer
 even # $h = 2k$ | k is an "

(combination of adding -7

000, 001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012, 013, 014, 015, 016, 017, 018, 019, 020, 021, 022, 023, 024, 025, 026, 027, 028, 029, 030, 031, 032, 033, 034, 035, 036, 037, 038, 039, 040, 041, 042, 043, 044, 045, 046, 047, 048, 049, 050, 051, 052, 053, 054, 055, 056, 057, 058, 059, 060, 061, 062, 063, 064, 065, 066, 067, 068, 069, 070, 071, 072, 073, 074, 075, 076, 077, 078, 079, 080, 081, 082, 083, 084, 085, 086, 087, 088, 089, 090, 091, 092, 093, 094, 095, 096, 097, 098, 099, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 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600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

$$\binom{50}{2} = \binom{49}{1} + \binom{49}{3} = 78449$$