33 $a_3 = 19$ $a_{15} = -1.7$

$a_{15} = a_3 + 12d$

$-1.7 = 19 + 12d$

$-20.7 = 12d$

$-1.725 = d$

$19 = a_1 + (3-1)(-1.725)$

$19 = a_1 - 3.45$

$22.45 = a_1$

$a_n = 22.45 + (n-1)(-1.725)$

$a_n = 22.45 - 1.725n + 1.725$

$a_n = 24.175 - 1.725n$

Apr 30-10:23 AM

Arithmetic Series

Q: What's a series?

A: Sum of a sequence

Two ways to notate a series:

Σ

S_n

Apr 17-10:42 AM

$1+2+\ldots+49+50+51+52+\ldots 99+100$

101

101

101

101

50

5050

$S_n = \frac{n}{2}(a_1 + a_n)$

p. 599, #57 (HW)

Apr 17-10:46 AM

Example

Find the sum of the first 65 terms of the arithmetic series

$33 + 39 + 45 + 51 + \ldots$

$a_n = a_1 + (n-1)d$

$a_{65} = 33 + (65-1)(6)$

$= 33 + 384$

$= 417$

$S_{65} = \frac{65(33+417)}{2}$

$= \frac{65(450)}{2}$

$= 14{,}625$

p. 599, #63 (HW)

Apr 17-10:47 AM

Example

Find the sum of the arithmetic series $\sum_{i=1}^{10}(6i-4)$

$S_{10} = \frac{10(2+56)}{2}$

$6(1)-4=2$

$6(10)-4=56$

$= \frac{10(58)}{2}$

$= 290$

p. 599, #73 (HW)

Apr 17-10:49 AM

Example

How many poles will be in a stack of telephone poles if there are 50 in the first layer, 49 in the second, and so on, with 6 in the top layer?

$50, 49, \ldots 6$

$S = \frac{45(50+6)}{2}$

$= \frac{45(56)}{2}$

$= 1{,}260$

$a_n = a_1 + (n-1)d$

$6 = 50 + (n-1)(-1)$

$6 = 50 - 1n + 1$

$6 = -1n + 51$

$-51 \quad -51$

$-45 = -1n$

$45 = n$

Apr 17-10:50 AM

HOMEWORK

...arithmetic=add.

8.2b (p. 598): 35-41 (odd), 57-73 (odd), 81, 83

Mar 31-6:02 PM

Apr 24-11:20 AM