$2+2^2+2^3+\dots+2^n = \frac{2(2^n-1)}{2-1}$

$510 = 2(2^n-1)$

$255 = 2^n-1$

$8 = n$ #

n 100 … 90 … 140

1120

2240

$\frac{11^{109}}{10} \rightarrow 11^{109} = 109+1$

$11^{111} = 120+121$ #

$1-x < -\frac{3}{4} < 7-x$

$1 < x-\frac{3}{4} < 7$

$1\frac{3}{4} < x < 7\frac{3}{4}$

2-7

① $\frac{a_1(1-r^n)}{1-r} = 13$

② $\frac{a_1(1-(-r)^{20})}{1-(-r)} = 17$

① ÷ ② $\frac{a_1(1-r^{20})}{1-r} \div \frac{a_1(1-r^{20})}{1+r} = \frac{13}{17}$

$\frac{1+r}{1-r} = \frac{13}{17}$

$17+17r = 13-13r$

$30r = 13-17$

$r = -\frac{4}{30} = -\frac{2}{15}$ #

$a_1+a_2 = 10$

$a_1+a_1+d = 10$

$2a_1+d = 10$

$2a_1+\frac{3}{2} = 10$

② $a_1 = \frac{17}{4}$

$a_{n+2}-a_n = 3$

$a_{1+2}-a_1 = 3$

$a_3-a_1 = 3$

$a_1+2d-a_1 = 3$

$2d = 3$

① $d = \frac{3}{2}$

$S_{40} = \frac{40}{2}\left(2\left(\frac{17}{4}\right)+(40-1)\frac{3}{2}\right)$

$= 20(8.5+58.5)$

$= 20(67)$

$= 1340$ #

A B C D E F

G H I J K L

M N O P Q R

S T U V W X

Y Z