9.

$$\sum_{n=5}^{35}(5n-8) = \sum_{1}^{35}(5n-8) - \sum_{1}^{4}(5n-8)$$

note: $\sum_{n=1}^{K} a_n = \frac{(a_1+a_K)}{2}K$

$$= \frac{(-3+167)}{2}35 - \frac{(-3+12)}{2}\cdot 4$$

$$= 2870 - 18$$

$$= 2852.$$

7\. \$500 each month 3% annual rate compounded monthly.

in 5 years.

after 1 month. $500\left(1+\frac{0.03}{12}\right)$

after 2 months $500\left(1+\frac{0.03}{12}\right)+500\left(1+\frac{.03}{12}\right)^2$

after 3 mo. $500\left(1+\frac{0.03}{12}\right)+500\left(1+\frac{0.03}{12}\right)^2+500\left(1+\frac{0.03}{12}\right)^3$

$$\sum_{n=1}^{60} 500\left(1+\frac{0.03}{12}\right)^n$$

$$= 500\left[1+\frac{0.03}{12}\right]\left[\frac{1-\left(1+\frac{0.03}{12}\right)^{60}}{1-\left(1+\frac{0.03}{12}\right)}\right]$$

$$\sum_{n=1}^{K} ar^{n-1}$$

$$= \frac{501.25\left[-0.16\right]}{-0.0025}$$

$$= 32,404.16$$

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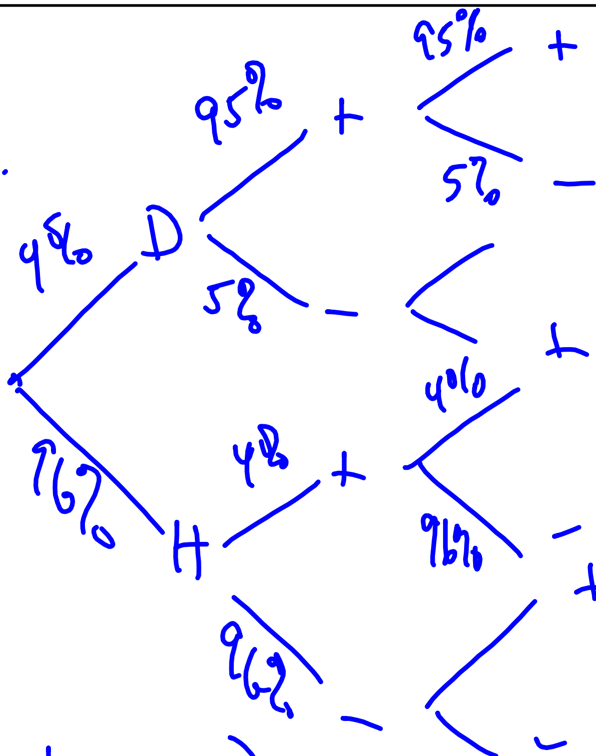
$$\sum_{k=1}^{10} \ln\left(\frac{k+1}{k}\right) = \ln(k+1) - \ln k$$

$$= \ln 2 - \ln 1 + \ln 3 - \ln 2 + \cdots \ln 11 - \ln 10$$

$$= \ln 11 - \ln 1 = \ln 11$$

3b



$$P(D \mid + \cap +) = \frac{P(D \cap + \cap +)}{P(+ \cap +)}$$

$$= \frac{(0.04)(0.95)^2}{(0.04)(0.95)^2 + (.96)(0.04)^2} =$$

$$= \frac{0.0361}{0.037636} = 95.9188$$

Birthday Problem.

Q: How many people are necessary to ensure the Probability of 2 people having The same B-day is 50%

A: 98? upperbound 366 Lowerbound: 2?

150?
182?
120?
90?
24?
97!

Complement Principle

P(no one having the same B-day)

P(none has same B-day)	n = # of people
$\frac{365 \cdot 364}{365^2} = 99.7\%$	2
$\frac{365 \cdot 364 \cdot 363}{365^3} = 99.2\%$	3
$\frac{365 \cdot 364 \cdot 363 \cdot 362}{365^4} = 98.4\%$ $= \frac{{}_{365}P_4}{365^4}$	4
$\frac{{}_{365}P_n}{365^n}$	n

$$f(n) = \frac{{}_{365}P_n}{(365)^n}$$

$5n-8: -3, 2, 7, 12, \underbrace{17 \ldots\ldots\ldots 167}$

$a_1 \qquad\qquad a_{30}$

$a_n = 5(n-1)+17$

$a_{30} = 5(29)+17$

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