

①

$$\frac{201}{2}$$

$$S_n = \frac{2(2^n - 1)}{2 - 1} = 510$$

$$2^n - 1 = 255$$

$$2^n = 256 \quad n = 8$$

②

$$a + a_3 + a_5 + \dots + a_n$$

$$13 = \frac{a_1(r^n - 1)}{r - 1}$$

$$a_n = \frac{a_1((2r)^n - 1)}{2r - 1}$$

$$\frac{a_n}{13} = \frac{a_1((2r)^n - 1)}{2r - 1} \times \frac{r - 1}{a_1(r^n - 1)}$$

$$\frac{a_n}{13} =$$

③

$$a_1 = a_3 - 3 \quad d = \frac{7}{2} \quad a_1 + a_2 + \dots = 216$$

$$a_1 = a_1 + 2d - 3$$

$$2a_1 = \frac{12}{2}$$

$$a_1 = \frac{12}{4}$$

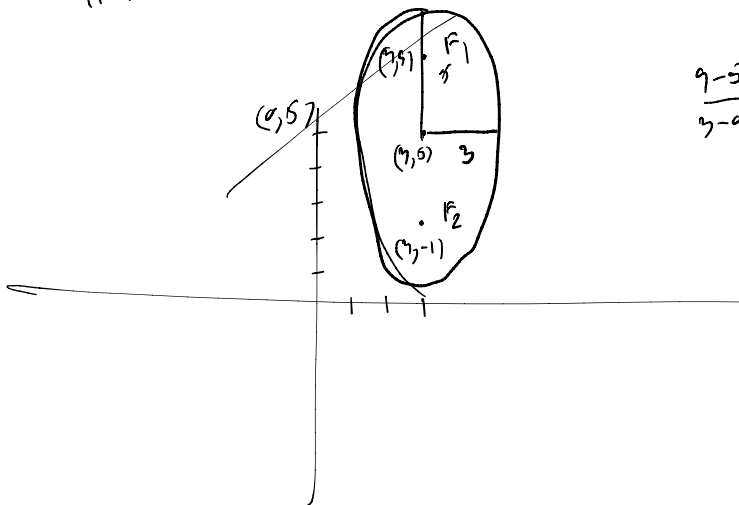
$$S_n = \frac{n}{2}(2a_1 + (n-1)d)$$

$$= 20\left(\frac{12}{2} + 39\left(\frac{7}{2}\right)\right)$$

④

$$\frac{(11)^{11}}{11^2 \cdot 10} = \frac{11^{10}}{10} = \frac{(10-1)^{10}}{10} + \frac{1}{10}$$

⑤



$$\frac{9-5}{3-0}(x-0) = y-5 \quad 12 + 3 + 15$$

$$\frac{4}{3}x = y-5 \quad 12 + 3 + 15$$

$$4x - 3y + 15 = 0$$

30

$$\frac{|4(3) + (-3)(-1) + 15|}{\sqrt{4^2 + (-3)^2}}$$

18

$$\frac{12 - 9 + 15}{5} = \frac{18}{5}$$

32

6

$$f(g(x)) = 3(g(x) + 1)$$

$$f(g(x))' = 3g'(x) = 3x^2 + 1 \quad 2^{(x)^2}$$

$$g'(x) = x^2 + \frac{1}{3}$$

$$\int S(x) = \int \left( x^2 + \frac{x}{3} + 1 \right)$$

$$\frac{x^3}{12} + \frac{x^2}{6} + x \Big|_0^1$$

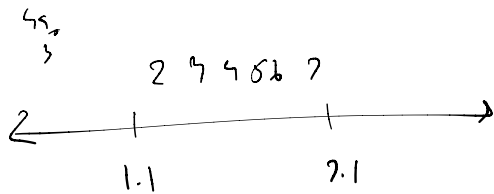
$$\frac{1}{12} + \frac{1}{6} + 1 = \frac{1+2+12}{12}$$

$$\frac{15}{12} = \frac{5}{4}$$

7

$$x-1 > \frac{7}{9} \quad \frac{7}{9} > x-1$$

$$x > \frac{16}{9} \quad x < \frac{52}{9}$$



8

$$y = ax^2 + bx + c$$

$$0 = 16a - 4b + c \quad -C$$

$$0 = 4a + 2b + c \quad -4$$

$$0 = 12a - 6b$$

$$0 = 2a - b$$

$$2a = b$$

$$16 = c$$

$$16a - 8a + 16 = c$$

$$-16 = 8a$$

$$a = -2$$

$$b = -4$$

$$y = -2x^2 - 4x + 16$$

$$y' = -4x - 4 = 0$$

$$x = 1$$

$$-2 + 4 + 16$$

9

$$\frac{dn}{dr} = 8 \frac{d}{dr} \left( \frac{1}{r+1} \right)$$

$$u = \frac{1}{r+1} \quad \frac{d}{dr} u = -1$$

$$8 \left( \frac{1}{(r+1)^2} \right) = \frac{8}{16} = \frac{1}{2}$$

12

$$\frac{50}{60} x = \frac{140}{100} (500)$$

$$x = \frac{14(500)}{5}$$

19

$$13 = \frac{a_1(r^{20} - 1)}{r - 1}$$

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

$$\frac{12}{13} = \frac{a_1(r^{20} - 1)}{1 - r} \times \frac{r - 1}{a_1(r^{20} - 1)}$$

$$17 - 17r = 13r - 13$$

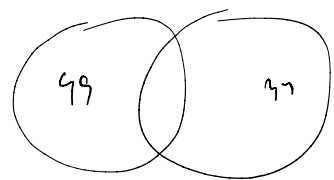
19 20 21  $\frac{44}{2} = 22$  20.5  
 60 62 66

$\frac{122}{2}$  61 20x

$$N(8) = \frac{\frac{8!}{7!1!} \times \frac{8!}{6!2!}}{8! \times 2!}$$

13  
8  
21

$$\frac{2 \times 8 \times 7}{2! \times 2!} = 35$$



$\frac{99}{2} = 49$

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18  $\binom{19}{1} \binom{49}{1}$

- 1-10
- 10-2
- 2-3
- 7-4
- 7-6
- 6-7
- 7-8
- 8-9
- 7-10

7 + 1

$\frac{13}{2}$

$n = 24x$

$$\frac{N}{x+y+2} = 6$$

$$4 = \frac{10}{x} \times \frac{x-n+1}{n}$$

$$\frac{N}{x} = 24$$

$$3 = \frac{7+2}{x}$$

$$2x = 7+2$$

$$24x = 4x + n(4+2)$$

$$\frac{20}{3} = 6$$

0 2 3

7, 7

21 +  
11  
72 +  
17

$\frac{49}{7}$

120 200

$$0.25A = 0.125B$$

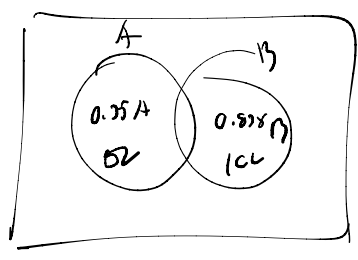
$$0.75A - 0.75B = 2$$

$$A \times B = 40000$$

$$0.75A + 0.525B = 120$$

$$1.2B = 120$$

$$B = 100$$



12.8

1	8	6	15
5	15	10	30
7	.	9	
13		28	

1  
A B C D E

	1	4	9	27
4	5	8	17	44
10	14	19	27	44

$$X_i = \bar{x} + \delta_i$$

$$89 = 277 + 122$$

$$12 = 2 \cdot 122$$

$$\begin{array}{r} 77 \\ 68 \\ 12 \end{array}$$

$$\begin{array}{r} 9 \\ 101 \\ 77 \\ 24 \end{array} \quad \begin{array}{r} 77 \\ 57 \\ 25 \end{array}$$

$\frac{98}{100}$  (average)

4	8	12	16	20	24
6	10	18	30	46	66

$$4 \quad 12 \quad 68 \quad 690$$

$$4 \times 1 \quad 4 \times 3$$

$$\begin{array}{cccccc} +9 & -4 & +17 & -4 & +29 & - \\ 9 & 18 & 14 & 28 & 27 & 48 \end{array}$$

$$\begin{array}{cccccc} 2 & 4 & 8 & 16 & 32 & \\ 1 & 3 & 7 & 15 & 31 & \\ & & & & & 1 \\ & & & & & 27 \\ & & & & & 7 \end{array}$$

$$\begin{array}{cccccc} 4 & 5 & 8 & 17 & & \\ 10 & 14 & 19 & 27 & 44 & \end{array}$$

$$\begin{array}{cccccc} 5 & 7 & 4 & 8 & 3 & 9 \\ +2 & -4 & +4 & -6 & & \end{array}$$

$$\sigma^2 \quad w$$

$$w \quad w$$

$$\frac{1}{2}(12)(12)$$

$$\frac{60(12)}{120}$$

$$5^2 \frac{60}{2} + 2 \frac{4.5 \times 10^9}{2} = 128$$

$$\begin{matrix} 2 \\ 4 \\ 8 \\ 16 \\ 32 \end{matrix}$$

+ 2

1 ?

2100 22500 600 10500

20000 (22500) 20000 22500

20000  
20000

	20000	22500	20000
20000	0	0	0
22500	0	0	0
20000	0	0	0

20000 22500  
20000 22500

D - - A

$$\frac{1}{2}(12)(12)$$

C F D B A -  
( 2 3 4 5 6 6 )

A chr

B chr

C chr