①

$\frac{2^9}{2}$ $\qquad S_n = \frac{2(2^n-1)}{2-1} = 510$

$2^n - 1 = 258$

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

②

$a + a_2 + a_5 = 4 \qquad a_{20} = \frac{a_1((2r)^{10}-1)}{2r-1}$

$13 = \frac{a_1(r^{10}-1)}{r-1}$

$\frac{a_{20}}{13} = \frac{a_1(2^{10}r^{10}-1)}{2r-1} \times \frac{r-1}{a_1(r^{10}-1)}$

$\frac{a_{20}}{13} =$

③

$a_1 = a_3 - 3 \qquad d = \frac{3}{2} \qquad a_1 + a_1 + \frac{3}{2} = 16$

$a_1 = a_1 + 2d - 3 \qquad 2a_1 = \frac{17}{2}$

$a_1 = \frac{17}{4}$

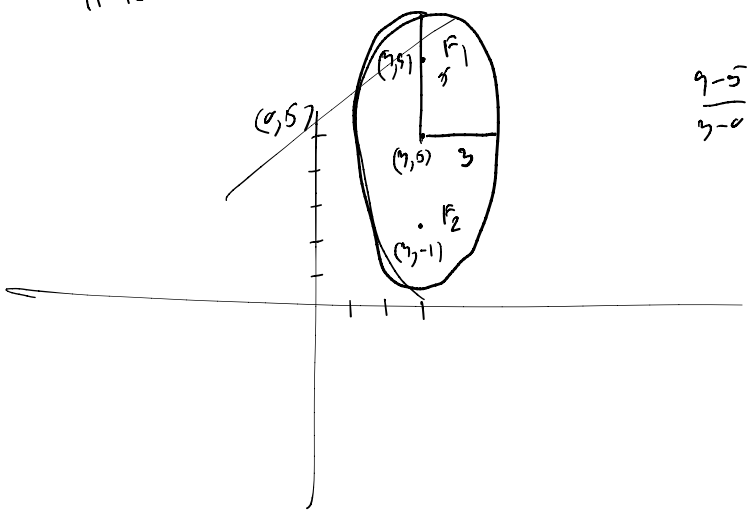
$S_n = \frac{n}{2}(2a + (n-1)d)$

$= 20\left(\frac{17}{2} + 39\left(\frac{3}{2}\right)\right)$

④

$\frac{(11)^{111}}{11^2 \cdot 10} = \frac{11^{104}}{10} = \frac{(10-1)^{104}}{10} + \frac{1}{10}$

⑤



$\frac{9-5}{3-0}(x-0) = y-6 \qquad 12 + 3 + 18$

$\frac{4}{3}x = y - 8 \qquad 12 + 3 + 18$

$4x - 3y + 15 = 0 \qquad 32$

$\frac{|4(3) + (-3)(-1) + 15|}{5} \qquad 18$

$12 - 9 + 16 \qquad 32$

25

⑥

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

$f(g(x))' = 3g'(x) = 3x^2 + 1$ $\quad 0(0) =$

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

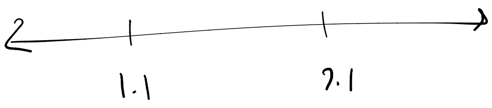
$\int g(x) = \int_0^1 \frac{x^3}{3} + \frac{x}{3} + 1$ $\quad \frac{15}{12}\ \frac{5}{4}$

$\frac{x^4}{12} + \frac{x^2}{6} + x \Big|_0^1$ $\quad \frac{1}{12} + \frac{1}{6} + 1 = \frac{1+2+12}{12}$

⑦

$x - 1 > \frac{4}{7}$ $\quad \frac{3}{7} > x - 7$

$x > \frac{11}{7}$ $\quad x < \frac{52}{7}$



⑧

$y = ax^2 + bx + c$ $\quad 16 = c$ $\quad y = -2x^2 - 4x + 16$

$0 = 16a - 4b + c$ $\quad -c$ $\quad 16a - 8a + 16 = c$ $\quad y' = -4a - 4 < 0$

$0 = 4a + 2b + c$ $\quad -c$ $\quad -16 = 8a$ $\quad (x < 1)$

$0 = 12a - 6b$ $\quad a = -2$

$0 = 2a - b$ $\quad b = -4$ $\quad -2 - 4 + 16$

$2a = b$

⑨

$\frac{dN}{dt} = 8 \frac{d}{dt}\left(\frac{1}{t+1}\right)$ $\quad u = t+1$ $\quad \frac{du}{dt} = 1$ $\quad \frac{d}{dt}\ t^{-1}$

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

12

$\frac{50}{100} x = \frac{140}{100}(50+4)$

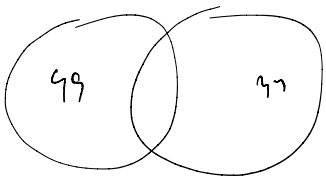
$x = \frac{14(50+4)}{5}$

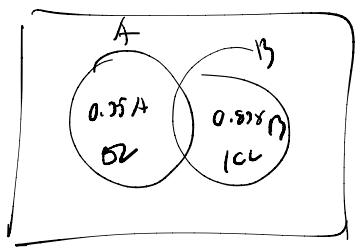
⑬

$13 = \frac{a_1(r^{20} - 1)}{r - 1}$, $\quad 17 = \frac{a_1(r^{20} - 1)}{1 - r}$

$\frac{17}{13} = \frac{a_1(r^{20} - 1)}{1 - r} \times \frac{r - 1}{a_1(r^{20} - 1)}$

$17 - 17r = 13r - 13$


49
37


A
B
0.35A
52
0.525B
100

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

1   5
A B C D E

1   3   9   27
4   5   8   17   44
10   14   19   27   44

77
68
12

$X_i = 7\bar{x} + 62$

89 = 77 + 122
12 = 122

9
101 −
77
24

77
53
24

95/144 (Green)

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

4   12   68   6 7 0
4×1   4×3

+9   −4   +14   −4   +24   −
9   18   14   28   24   48

2   4   8   16   32
1   3   7   15   31

3
24
27
7

4   5   8   17
10   14   19   27   44

5 7 4 8 3 9
+2 −4 +4 −8

ต่ำ   ผ
เพศ   ช

$\frac{1}{2}(120)(12)$

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

$5 = \frac{640}{2^{t/T}}$

$2^{t/4.5\times10^9} = 128$

$t = 2$

2
4
8
16
32

1 ?

[illegible]

	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

$m_1v_1 = m_2v_2$ $\quad v_1$

$5(v_1) = 0.5(100)$

$\frac{\frac{1}{2}(120)(12)}{120}$

D _ _ A

C F D B _ A _

1 2 3 4 5 6 7

A [illegible]

B [illegible]

C [illegible]