(9)

N 1	V	I	N	C	U	L	U	M
V 2	2	6	1	5	7	3	7	4
L 3								
M 4								
C 5								
I 6								
U 7								

VINCULUM

$\frac{3}{4}$ ← FRACTION BAR, OR VINCULUM

$\dot{7}$ ← OR REPEATING SYMBOL

(10) A) $A+B=0 \rightarrow A=-B$ OR $B=-A$

$\frac{A^{1995}}{(-A)^{1995}} = \frac{1}{-1} = -1$

$X = -1$

B)

12:00	81	1:30	36
12:30	81	1:30:01	24
12:30:01	54	2:00	24
1:00	54		
1:00:01	36		

$Y = 24$

$X \cdot Y = -1(24) = \boxed{-24}$

(11) A) $m = \frac{-4}{1} = \frac{-4-8}{4-A}$

$-16+4A = -12$

$4A = 4$

$A = 1$

B) $h(-1) = (-1)^2+2(-1) = 1-2 = -1$

$g(-1) = 5(-1) = -5$

$f(-5) = 7(-5)-2 = -37 = B$

$\sqrt{A-B} = \sqrt{-1-(-37)} = \sqrt{-1+37} = \sqrt{36}$

$\boxed{6}$

(12)

A $+\frac{3}{5}$

10	9	−14	9	
	6	9	−3	
10	15	−5	(6)	

B -4

1	2	−11	−7	+20	
	−4	8	12	−20	
1	−2	−3	5	(0)	

C -1

1	0	9	−3	
	−1	1	−1	
1	−1	1	(2)	

6
0
+2
$\boxed{8}$

(13) A) $60\left(\frac{X}{5}+\frac{X}{10}+\frac{X}{15}+\frac{X}{20} = 1+\frac{1}{2}+\frac{1}{3}+\frac{1}{4}\right)$

$12X+6X+4X+3X = 60+30+20+15$

$25X = 125$

$X = 5$

B) $R_{(y)} = \frac{1}{2}+\frac{1}{3}+\frac{1}{6} = \frac{3+2+1}{6} = \frac{6}{6} = 1$

$y = 1 \qquad x+y = 5+1 = \boxed{6}$

(14) A)

	RATE	TIME	DISTANCE
AVG WALK	X	$\frac{9}{X}$	9
FAST WALK	$X+1$	$\frac{9}{X+1}$	9

$T_{AVG} = T_{FAST} + \frac{3}{4}$

$\frac{9}{X} = \frac{9}{X+1} + \frac{3}{4}$ $\quad m_{4X(X+1)}$

$36X+36 = 36X+3X^2+3X$

$0 = X^2+X-12$

$0 = (X+4)(X-3)$

$X = -4$ NO $\quad X = 3$

$X = 3$

B) LET y = TIME TOGETHER

$\frac{T.T.}{T_{P_1}} + \frac{T.T.}{T_{P_2}} - \frac{T.T.}{T_D} = 1 \text{ JOB}$

$\frac{y}{4}+\frac{y}{6}-\frac{y}{12} = 1$ $\quad m_{12}$

$3y+2y-y = 12$

$4y = 12$

$y = 3$

$X+y =$

$3+3 = \boxed{6}$

(15) $5X^2+BX-10 = 0$

$R_1 = -5 \qquad R_2 = ?$

PRODUCT OF THE ROOTS IS $\frac{c}{a}$

$-5 \cdot R_2 = \frac{-10}{5} = -2$

$\frac{-5R_2}{-5} = \frac{-2}{-5}$

$\boxed{R_2 = \frac{2}{5}}$

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① $\left[\frac{m-k}{m+k}\cdot\left(\frac{3m}{m-k}-\frac{3k}{k-m}\right)\right]^4$

$\left[\frac{m-k}{m+k}\cdot\left(\frac{3m}{m-k}+\frac{3k}{m-k}\right)\right]^4$

$\left[\frac{m-k}{m+k}\cdot\frac{3(m+k)}{m-k}\right]^4$

$[3]^4 = 81$

② $.\overline{1} = \frac{1}{9} = \frac{110}{990} = A$

$.\overline{13} = \frac{13}{99} = \frac{130}{990} = B$

$.2\overline{03} = \frac{201}{990} = \frac{201}{990} = C$

ADD $\frac{441}{990}$

R_9 $\frac{49}{110}$

③ $A = \sqrt{1+\frac{1}{2+\frac{1}{1+3}}} = \sqrt{1+\frac{1}{2\frac{1}{4}}} =$

$\sqrt{1+\frac{1}{\frac{9}{4}}} = \sqrt{1+\frac{4}{9}} =$

$\sqrt{\frac{13}{9}} = \frac{\sqrt{13}}{3} = A$

$B = \left[\left(1-2^{-1}\right)^{-2}-1\right]^2 =$

$\left[\left(\frac{1}{2}\right)^{-2}-1\right]^2 = (4-1)^2 =$

$3^2 = 9 = B$

$C = \left(\frac{\frac{-1}{2}+\frac{2}{3}}{\frac{2}{3}-\frac{5}{6}}\right)\left(\frac{6}{6}\right) =$

$\frac{-3+4}{4-5} = \frac{1}{-1} = -1 = C$

$D = 1-2\left[4-\frac{1}{2}(1-3)^{-2}\right]$

$= 1-2(4+1) = 1-2(5)$

$= 1-10 = -9 = D$

$B + D + A \div C$

$9 + -9 + \frac{\sqrt{3}}{3} \div (-1)$

$\frac{-\sqrt{3}}{3}$

④ $\begin{cases} \mathcal{L}+\mathcal{l} = 23 \\ 3.15\mathcal{L}+1.25\mathcal{l} = 42.05 \end{cases}$

$\begin{cases} 3.15\mathcal{L}+1.25\mathcal{l} = 42.05 \\ -1.25\mathcal{L}-1.25\mathcal{l} = -28.75 \end{cases}$

$1.9\mathcal{L} = 13.3$

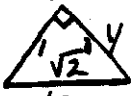
$\mathcal{L} =$ 7 LONG SNAKES

⑤ A) NUMBER $= x$

$7x + \frac{x}{7} = \frac{500}{7}$ M_7

$50x = 500$

$x = 10$

B) 

$y = \frac{10}{\sqrt{2}} = 5\sqrt{2}$

C) $\sqrt{m^2-5m} = 5\sqrt{2}$

SQ. $m^2-5m = 50$

$m^2-5m-50 = 0$

$(m-10)(m+5) = 0$

$m = 10$ $m = -5$

$x+y-m =$

$5\sqrt{2}+10-10$

$5\sqrt{2}$

⑥ A $(3x-7)(4x+9)$

$27x-28x = -1x$

B $(5x-3)(2x^2-7x+3)$

$-35x^2-6x^2 = -41x^2$

C $(2x^2-3x+4)(x^2+5x-2)$

$-4x^2-15x^2+4x^2 = -15x^2$

D $(2x^2-7)(5x^2+11)$

$22x^2-35x^2 = -13x^2$

$-1-41-15-13 =$ **−70**

⑦ A $\begin{cases} x = 2y-3 \\ 5x-21 = y \end{cases}$

$5(2y-3)-21 = y$

$10y-15-21 = y$

$-36 = -9y$

$y = 4 = A$

⑦C

	PRESENT AGE	AGE +24
MR.	$5x$	$5x+24$
SON	x	$x+24$

$MR. = 2(SON)$

$5x+24 = 2(x+24)$

$5x+24 = 2x+48$

$3x = 24$

$x = 8 = C$

B) $5-3x = 7$ OR $5-3x = -7$

$-3x = 2$ OR $-3x = -12$

$x = -\frac{2}{3}$ OR $x = 4$

$4 = B$

$\sqrt{4+4+8} = \sqrt{16} =$ **4**

⑧ $m = \frac{-6-10}{-1-2} = \frac{4}{-3}$ $\perp m = \frac{4}{-3}$

MIDPT $= \left(\frac{-4+2}{2}, \frac{-6+10}{2}\right) = (-3, 2)$

$m = \frac{-4}{3}$ $(-3, 2)$ $4x+3y = ?$

$4x+3y = -6$ $4(-3)+3(2) = -12+6$

$\frac{A}{C} = \frac{4}{-6} = \frac{-2}{3}$