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Bintang Arya Pramudya 1405102100 68

1 a. $x \equiv 12 \pmod{25}$

$x \equiv 9 \pmod{26}$

$x \equiv 23 \pmod{27}$

Jawab

$m1 = 25, m2 = 26, m3 = 27$

$M = 25 \cdot 26 \cdot 27 = 17550$

Maka $M1 = \frac{17550}{25} = 702$, $\frac{17550}{26} = 675$, $\frac{17550}{27} = 650$

$702 y_1 \equiv 1 \pmod{25} \rightarrow Y1 \equiv 13 \pmod{25}$

$675 x2 \equiv 1 \pmod{26} \rightarrow Y2 \equiv 1 \pmod{26}$

$650 Y3 \equiv 1 \pmod{27} \rightarrow Y3 \equiv 14 \pmod{27}$

$x \equiv 12 \cdot 702 \cdot 13 + 9 \cdot 675 \cdot 1 + 23 \cdot 650 \cdot 14 \pmod{17550}$

$x \equiv 464612 \pmod{17550}$ → Maka $x \equiv 8312 \pmod{17550}$

b. Cari $3125^{-1} \bmod 9987$

$X \cdot 3125 = 1 \bmod (9987)$

GCD $(9987, 3125) = 1$

$9987 = 3125 \cdot 3 + 612$ (1)

$3125 = 612 \cdot 5 + 65$ (2)

$612 = 65 \cdot 9 + 27$ (3)

$65 = 27 \cdot 2 + 11$ (4)

$27 = 11 \cdot 2 + 5$ (5)

$11 = 5 \cdot 2 + 1$ (6)

$5 = 1 \cdot 5 + 0$ (7)

$612 = 9987 - 3125 \cdot 3$ (8)

$65 = 3125 - 612 \cdot 5$ (9)

$27 = 612 - 65 \cdot 9$ (10)

$11 = 65 - 27 \cdot 2$ (11)

$5 = 27 - 11 \cdot 2$ (12)

$1 = 11 - 5 \cdot 2$ (13)

Sulihkan (12) - (13)

$1 = 11 - (27 - 11 \cdot 2) \cdot 2$

$1 = -27 \cdot 2 + 11 \cdot 5$ (14)

Sulihkan (11) - (14)

$1 = -27 \cdot 2 + (65 - 27 \cdot 2) \cdot 5$

$1 = 65 \cdot 5 - 27 \cdot 12$ (15)

Sulihkan (10) - (15)

$1 = 65 \cdot 5 - (612 - 65 \cdot 9) \cdot 12$

$1 = -612 \cdot 12 + 65 \cdot 113$ (16)

Sulihkan (9) - (16)

$1 = -612 \cdot 12 + (3125 - 612 \cdot 5) \cdot 113$

$1 = 3125 \cdot 113 - 612 \cdot 577$ (17)

Sulihkan (8) - (17)

$1 = 3125 \cdot 113 - (9987 - 3125 \cdot 3) \cdot 577$

$1 = -9987 \cdot 577 + 3125 \cdot 1844$

$1844 \cdot 3125 - 577 \cdot 9987 = 1$

Maka, 1844 adalah invers dari 3125 mod (9987)

1. C. GCD (9888, 6060)

Jawab

$9888 = 6060 \cdot 1 + 3828$

$6060 = 3828 \cdot 1 + 2232$

$3828 = 2232 \cdot 1 + 1596$

$2232 = 1596 \cdot 1 + 636$

$1596 = 636 \cdot 2 + 324$

$636 = 324 \cdot 1 + 312$

$324 = 312 \cdot 1 + 12$

$312 = 12 \cdot 26 + 0$

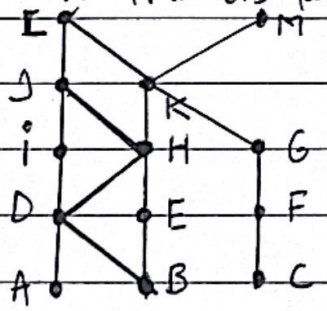
Maka $GCD(9888, 6060) = 12$

2 a) $X = \{A, B, C, D, E, F, G, H, I, J\}$

R	A	B	C	D	E	F	G	H	I	J
A	1	1	0	1	1	0	0	1	1	0
D	1	1	0	1	1	0	0	1	1	0
C	0	0	1	0	0	0	0	0	0	0
D	1	1	0	1	1	0	0	1	1	0
E	1	1	0	1	1	0	0	1	1	0
F	0	0	0	0	0	1	1	0	0	1
G	0	0	0	0	0	1	1	0	0	1
H	1	1	0	1	1	0	0	1	1	0
I	1	1	1	0	1	1	0	0	1	1	0
J	0	0	0	0	0	1	1	0	0	1

b) → R. Refleksi karena $(A,A), (B,B), \ldots, (J,J)$ anggota relasi
→ R. Simetri karena $(A,B), (B,A), \ldots$, semua pasangan terbaliknya anggota relasi
→ R. Transitif karena $(A,B), (B,D)$ dan (A,D) anggota relasi.

3.



a) Find the max elements : L, M

b) Find the min elements : A, B, C

C) is there a greatest element = No

D) is there a least element = No

E) find all upper bounds of $\{A,B,C\}$ = L, K, M

F) find the least upper bound of $\{A,B,C\}$ if it exists = K

G) find all lower bounds of $\{f,g,h\}$ = None (Gaada)

H) find the greatest lower bound of $\{f,g,h\}$ if it exists = None (Gaada)

No.

Date:

4) a. $\lceil x \rceil - \lfloor x \rfloor = x - x = 0$

Jadi $\lfloor x \rfloor = n$, $n < x < n+1$ / $(-n-1 < -x < -n)$

$\lceil x \rceil = m$, $m-1 < x < m$

$(m-1) + (-n-1) < x - x < m - n$

$m - n - 2 < 0 < m - n$

$\lceil x \rceil - \lfloor x \rfloor - 2 < 0 < \lceil x \rceil - \lfloor x \rfloor$

$0 < \lceil x \rceil - \lfloor x \rfloor < 2$

$\lceil x \rceil - \lfloor x \rfloor$ adalah integer maka $\lceil x \rceil - \lfloor x \rfloor = 1$

Jadi, $\lceil x \rceil - \lfloor x \rfloor = \begin{cases} 0, & x \in \mathbb{Z} \\ 1, & x \notin \mathbb{Z} \end{cases}$

4 b. Graph function $f(x) = [x] \times [x/2]$ from R to R