

18. Plot on the same graph the curves of the following system of four linear equations. Plot each curve for the range of x shown.

$$2y - 5x = 5 \quad -1 \leq x \leq 1 \quad (L_1)$$

$$3x + 2y = 13 \quad 1 \leq x \leq 3 \quad (L_2)$$

$$2y - 3x = -5 \quad 3 \leq x \leq 5 \quad (L_3)$$

$$5x + 2y = 35 \quad 5 \leq x \leq 7 \quad (L_4)$$

The four linear curves form the letter

- (1) W. (2) Z. (3) F. (4) M.

19. Given $R = \omega L Q$ $Q = \frac{\omega L}{r}$ $\omega^2 = \frac{1}{LC}$

Solve for R in terms of L , C , and r .

(1) $R = \frac{L\sqrt{L}}{r\sqrt{C}}$ (3) $R = \frac{\omega L}{Cr}$ (Hint: substitute for Q in the first equation and simplify. Next, substitute for ω^2 and simplify.)

(2) $R = \frac{L}{Cr}$ (4) $R = \frac{rL}{C}$

20. Solve the fourth-order linear system

$$3x - 2y + 2z + 4u = -3$$

$$2x + 3y + 2z + 5u = 6$$

$$5x - 2y + 5z - u = -4$$

$$4x - 6y - 6z + 2u = -2$$

The value of x is

- (1) 1. (2) 2. (3) 3. (4) 5. (5) 8.

21. The value of y in Question 20 lies in the range

(1) $-1 < y \leq 1$. (3) $2 < y \leq 3$.

(2) $1 < y \leq 2$. (4) $3 < y \leq 4$.

22. The sum of the values of z and u in Question 20 lies in the range

(1) $-6 \leq z + u \leq -4$. (3) $-2 \leq z + u \leq 0$.

(2) $-4 \leq z + u \leq -2$. (4) $0 \leq z + u \leq 2$.

23. Given $\mu = \frac{\Delta e_b}{\Delta e_c}$ $r_p = \frac{\Delta e_b}{\Delta i_b}$ $g_m = \frac{\Delta i_b}{\Delta e_c}$

Find μ in terms of r_p and g_m .

(1) $\mu = \frac{r_p}{g_m}$ (3) $\mu = \frac{r_p(i_b + i_c)}{g_m}$

(2) $\mu = r_p g_m$ (4) $\mu = \frac{g_m}{r_p}$