Aptitude Assignment 2

1. What quantity of water should be added to the milk water mixture so that the milk water ratio changes from 2:3 to 4:11. The quantity of milk in the mixture is 40 litres? 20 litres of water should be added.

2. Linear equation 2x+3y=0 meets the x & y-axis at the point? (0,0)

3. a & b are positive integers such that a^2-b^=19. Find a & b? (a=10, b=9)

4. Find a^+b^3+c^3+3abc , where a+b+c=5 & , a^2+b^2+c^2=10? 12.5

5. Sum of two, two-digit numbers is a perfect square. The digits of the first two-digit number are two consecutive positive integers; also, when the digits of the first number are reversed, the second number is formed. Find these numbers & the square root of their sum.

   ↳ two digits numbers are 23 & 32.

   Root of their sum is $\sqrt{55}$.

Q.1) Sol)

2 : 3 to 4 : 11

$40 : 3w = 40 : (11(w+x)/4)$

$w = 11x$.

i.e. initial amt of water was $11x$ litres.

$15 \times 40 = 11x$

$x = 6$

$440 + 4y = 11 \times 40$

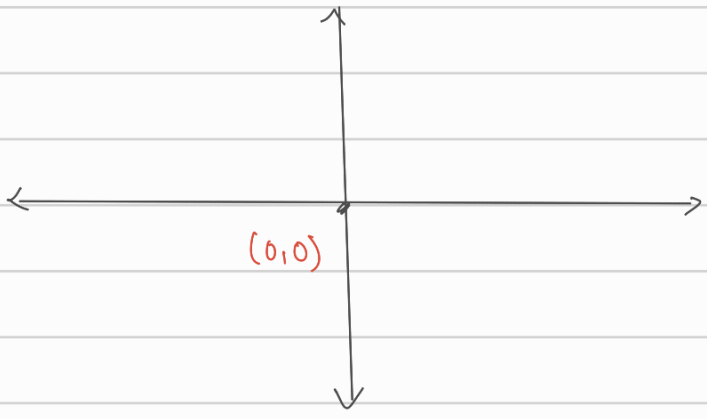
$y = 20$ litres ⇒ ans

Q.2) Sol:

$2x + 3y = 0$

$x = 0$

$y = 0$



Q.3) Sol:)

$a^2 - b^2 = 19$

$(a+b)(a-b) = 19$

∵ 19 is prime no only 2 factors 19×1

Case 1: $a + b = 19$

$a - b = 1$

$a = 10$, $b = 9$

Case 2: $a + b = 1$ $\quad a - b = 19$

$a = 10$

$b = -9$

∵ b can't be +ve

∴ Soln is $a = 10$, $b = 9$.

Q.4) Sol)

$$(a+b+c)^2 = a^2+b^2+c^2+2(ab+bc+ac)$$
$$5^2 = 10 + 2(ab+bc+ac)$$
$$ab+bc+ac = 7.5 \quad -(1)$$

Now;

$$(a+b+c)(a^2+b^2+c^2-ab-bc-ac) = a^3+b^3+c^3-3abc$$
$$5(10-7.5) = a^3+b^3+c^3-3abc$$

$\therefore$ $a^3+b^3+c^3-3abc = \underline{12.5}$ → Ans

Q.5) Sol:

x & y are digits.

x - tens, y - unit

$$x = y-1$$

→ $10x+y$ —(1)

→ $10(y-1)+y$

$11y-10$

Reversed $10y+x$ —(2)

Sum of (1) + (2)

$$(11y-10)+(10y+x) = 21y+x-10$$

$\therefore$ above (1)+(2) (sum) is perfect square

$$21y+x-10 = k^2$$

$\because$ x & y are b/w $[0,9]$

Hit & trial for $y=2$

$$32+x = k^2$$

$\therefore$ 2 digit no's are 23 & 32 → Ans

$$\sqrt{23+32} = \underline{\sqrt{55}}.$$ → Ans