Solution of Recitation - 1.1 and 1.2 **Done by: A. Al-Shallali**

Q1) (a) $\frac{2x-3}{3} - \frac{x-1}{2} = 3 - \frac{x-1}{6} \xrightarrow[\text{by 6}]{\text{multiply}} 2(2x-3) - 3(x-1) = 18 - (x-1) \implies 4x - 6 - 3x + 3$

$= 18 - x + 1 \implies x - 3 = -x + 19 \implies 2x = 22 \implies x = 11.$

The equation has one soltion, so it is a conditional equation.

(b) $x^2 - 2x + 1 = (x-1)^2 \implies x^2 - 2x + 1 = x^2 - 2x + 1$ which is always true (the two sides are identical). This means that the equation is an identity. Moreover S.S. $= \Re$

(c) $\frac{4x+8}{4} = x + 5 \implies \frac{4x}{4} + \frac{8}{4} = x + 5 \implies x + 2 = x + 5 \implies 2 = 5$ which is never true, so the equation is a contradiction and S.S. $= \phi$.

Q2) (a) $S = 2\pi(r_1 + r_2)h \implies S = 2\pi h r_1 + 2\pi h r_2 \implies S - 2\pi h r_2 = 2\pi h r_1 \implies r_1 = \frac{S - 2\pi h r_2}{2\pi h}$

(b) $y = \frac{a+x}{3-ax} \implies a + x = 3y - ayx \implies x + ayx = 3y - a \implies (1+ay)x = 3y - a \implies x = \frac{3y-a}{1+ay}$

Q3) Let the two consecutive odd integers (عددان فرديان متتاليان) be x and $x+2$.

Therefore $(x+2)^2 - x^2 = 40 \implies x^2 + 4x + 4 - x^2 = 40 \implies 4x = 36 \implies x = 9.$

So the two consecutive odd integers are 9 and 11.

Q4) Let L = length and W = width, where L = W + 6. The perimeter = 60 = 2(L + W)

$\implies$ 30 = L + W = (W + 6) + W = 2W + 6 $\implies$ 24 = 2W $\implies$ W = 12 cm and

L = W + 6 = 12 + 6 = 18 cm.

Q5) The equation $2[5(x-3) + m] = (m+4)x - 18$ is an **identity**. This means that the two sides are **identical**. Thus $10(x-3) + 2m \equiv mx + 4x - 18 \implies 10x + (2m - 30) \equiv (m+4)x - 18$

$\implies 10 = m + 4$ and $2m - 30 = -18 \implies \boxed{\text{m=6}}$ and $2m = 12 \implies \boxed{\text{m=6}}$.