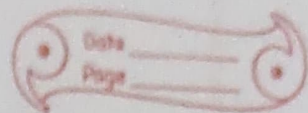


Substitution



20(B)

~~(i)~~ (i) $(23 - 15) + 4 = 12$

(ii) $5x + (3x + 7x) = 15x$

(iii) $6m - (4m - m) = 3m$

(iv) $(9a - 3a) + 4a = 9a$

(v) $35b - (16b + 9b) = 10b$

(vi) $(3y + 8y) - 5y = 6y$

(vii) $12x - (5x + 2x) = 5x$

(viii) $10m + (4n - 3n) - 5n = 10m + (-4n)$

(ix) $(15b - 6b) - (8b + 4b) = 9b - 12b = -3b$

(x) $-(-4a - 8a) = +4a - 8a = -4a$

(xi) ~~$x - (x - y) - (-x + y) =$~~

$$(v) x - (x - y) - (-x + y)$$

$$= x - (x - y) - (+x - y)$$

$$= x - (x - y) - x + y$$

$$= x - x + y - x + y$$

$$= x + x + y - x + y$$

$$(vi) p + (-q - r - s) - (p - q - r)$$

$$= p + (-q - r - s) - p + q + r$$

$$= p - q + r + s - p + q + r$$

$$(vii) (a + b) - (c + d) - (e - f)$$

$$= (a + b) - (c + d) - e + f$$

$$= (a + b) - c - d - e + f$$

$$= a + b - c - d - e + f$$

$$\text{iii) } 3x + (8x - 5x) - (7x - x)$$

$$= 3x + 3x - 8x$$

$$= 3x + (-5x)$$

$$= 3x - 5x$$

$$= -2x$$

$$\text{(ix) } a - (a - b - c)$$

$$= a - a + b + c$$

$$\text{(x) } 6a^2 + (2a^2 - a^2) - (a^2 - b^2)$$

$$= 6a^2 + (2a^2 - a^2) - a^2 + b^2$$

$$= 6a^2 + 2a^2 - a^2 - a^2 + b^2$$

$$\text{(xi) } 2m - (3m + 2n - 6n)$$

$$= 2m - 3m - 2n + 6n$$

$$(xii) -m - n - (-m) - m$$

$$= -m - n + m - m$$

$$(xiii) x + y - (x + y - x)$$

$$= x + y - x - y + x$$

$$(xiv) 25y - (5x - 10y + 6x - 3y)$$

$$= 25y - 5x + 10y - 6x + 3y$$

$$= 25y + 10y + 3y + 5x - 6x = 18y + (-x)$$

$$(xv) 3x + (2x - x + 2)$$

$$= 3x + 2x - x + 2$$

$$= 5x - 3$$

$$= 2x$$

$$(xvi) a - (2a - 4a + 3b)$$

$$= a - 2a + 4a - 3b$$

$$= \cancel{a} - \cancel{2a} = 3a - 3b$$

$$(xvii) 5x^2 - (3x - x^2 - 4)$$

$$= 5x^2 - 3x + x^2 + 4$$

$$= \cancel{5x^2} + x^2 - 3x + 4$$

$$(xviii) -(y - x) - (x + y - 2x + y)$$

$$= -y + x - x - y - 2x - y$$

$$= 2x - y$$

$$3(i) x - (y - z) + x + (y - z) + y - (z + x)$$

$$= x - y + z + x + y - z + y - z - x$$

$$= x + x - x - y + y + y + z - z - z$$

$$= x + y - 2$$

$$(ii) x - [y + \frac{1}{2}x - (y + x) \cdot 3]$$

$$= x - [y + \frac{1}{2}x - y - x \cdot 3]$$

$$= x - [y + x - y - x]$$

$$= x - y - x + y + x$$

$$= x - x + x - y + y$$

$$= x$$

$$(iii) 4x + 3(2x - 5y)$$

$$= 4x + 3 \times 2x - 3 \times 5y$$

$$= 4x + 6x - 15y$$

$$= 10x - 15y$$

$$(iv) 2(3a - b) - 5(a - 3b)$$

$$= 6a - 2b - 5a + 15b$$

$$= 6a - 5a - 2b + 15b$$

$$13b$$

$$= 1a + \cancel{13b}$$

$$(v) p + 2(q - \overline{r + p})$$

$$= p + 2q - 2r + 2p$$

$$= p + 2p - 2r + 2q$$

$$= \overset{3p}{\cancel{3p}} - 2r + 2q$$

$$(vi) a - [-\{-(a - b - c)\}]$$

$$= a - [-\{-a + b + c\}]$$

$$= a - [+a - b - c]$$

$$= a - a + b\bar{c}$$

$$= b\bar{c}$$

$$(vii) 3x - [5y - \{6y + 2(10y - x)\}]$$

$$= 3x - [5y - \{6y + 20y + 2x\}]$$

$$= 3x - [5y + 6y + 20y - 2x]$$

$$= 3x - 5y - 6y - 20y + 2x$$

Wrong

$$= 3x + 2x - 5y - 6y - 20y$$

$$= 5x + 21y$$