Identities

Solution

5. L.H.S. $= 7(B - x)$
$= 7B - 7x$
$= -7x + 7B$

$\therefore -7x + 7B \equiv Ax + 14$

Comparing like terms on both sides, we have
$A = -7$
$7B = 14$
i.e. $B = 2$

6. L.H.S. $= P(x + 2) - 7$
$= Px + 2P - 7$

R.H.S. $= 3(x - 1) - Q$
$= 3x - 3 - Q$

$\therefore Px + 2P - 7 \equiv 3x - 3 - Q$

Comparing like terms on both sides, we have
$P = 3$

$2P - 7 = -3 - Q$

$\therefore 2(3) - 7 = -3 - Q$

$Q = -2$

7. L.H.S. $= 2(x^2 - 4) + Ax$
$= 2x^2 - 8 + Ax$
$= 2x^2 + Ax - 8$

R.H.S. $= (x + B)(Cx - 8)$
$= (x + B)(Cx) + (x + B)(-8)$
$= Cx^2 + BCx - 8x - 8B$
$= Cx^2 + (BC - 8)x - 8B$

$\therefore 2x^2 + Ax - 8 \equiv Cx^2 + (BC - 8)x - 8C$

Comparing like terms on both sides, we have
$C = 2$
$8 = 8B$
$\therefore B = 1$
$A = BC - 8$
$= (1)(2) - 8$
$= -6$

8. Sub $x = -3$ on both sides,
L.H.S. $= 0$
R.H.S. $= (-3)^2 - 2(-3) - C$
$= 9 + 6 - C$
$= 15 - C$
$\therefore C = 15$

Sub $x = -1$ on both sides,

L.H.S. $= A(-1 - 2)(-1 + 3)$
$= -6A$

R.H.S. $= (-1)^2 - 2(-1) - 15$
$= 1 + 2 - 15$
$= -12$

$\therefore -6A = -12$
$A = 2$

Sub $x = 2$ on both sides,

L.H.S. $= B(2 + 1)(2 + 3)$
$= 15B$

R.H.S. $= (2)^2 - 2(2) - 15$
$= 4 - 4 - 15$
$= -15$

$\therefore 15B = -15$
$B = -1$