ALGEBRA (Q 1 & 2, PAPER 1)

LESSON NO. 2: IDENTITIES

2006

1 (c) $x^2 - t$ is a factor of $x^3 - px^2 - qx + r$.

  (i) Show that $pq = r$.

  (ii) Express the roots of $x^3 - px^2 - qx + r = 0$ in terms of p and q.

2005

1 (c) $(x - p)^2$ is a factor of $x^3 + qx + r$. Show that $27r^2 + 4q^3 = 0$. Express the roots of $3x^2 + q = 0$ in terms of p.

2003

2 (b) (ii) Given that $x^2 - ax - 3$ is a factor of $x^3 - 5x^2 + bx + 9$ where $a, b \in \mathbf{R}$, find the value of a and the value of b.

2001

1 (a) Find the real numbers a and b such that $x^2 + 4x - 6 = (x + a)^2 + b$ for all $x \in \mathbf{R}$.

1 (c) $x^2 - px + q$ is a factor of $x^3 + 3px^2 + 3qx + r$.

  (i) Show that $q = -2p^2$.

  (ii) Show that $r = -8p^3$.

  (iii) Find the three roots of $x^3 + 3px^2 + 3qx + r = 0$ in terms of p.

ANSWERS

2006 1 (c) $x = p, \pm\sqrt{q}$

2005 1 (c) $x = \pm p$

2003 2 (b) (ii) $a = 2, b = 3$

2001 1 (a) $a = 2, b = -10$ 1 (c) $x = -4p, -p, 2p$