Answers - Polynomials and Factor Theorem

Exercise A

1 **a** $x^2 + 5x + 3$ **b** $x^2 + 6x + 1$ **c** $x^2 + x - 9$
d $x^2 + 4x - 2$ **e** $x^2 - 3x + 7$ **f** $x^2 + 4x + 5$
g $x^2 - 3x + 2$ **h** $x^2 - 2x + 6$ **i** $x^2 - 3x - 2$
j $x^2 + 2x + 8$

2 **a** $6x^2 + 3x + 2$ **b** $4x^2 + x - 5$
c $3x^2 + 2x - 2$ **d** $3x^2 + 4x + 8$
e $2x^2 - 2x - 3$ **f** $2x^2 - 3x - 4$
g $-3x^2 + 5x - 7$ **h** $-2x^2 - 3x + 5$
i $-5x^2 + 3x + 5$ **j** $-4x^2 + x - 1$

3 **a** $x^3 + 3x^2 - 4x + 1$ **b** $x^3 + 6x^2 - 5x - 4$
c $4x^3 + 2x^2 - 3x - 5$ **d** $3x^3 + 5x^2 - 3x + 2$
e $-3x^3 + 3x^2 - 4x - 7$
f $3x^4 + 2x^3 - 8x^2 + 2x - 5$
g $6x^4 - x^3 - 2x^2 - 5x - 2$
h $-5x^4 + 2x^3 + 4x^2 - 3x + 7$
i $2x^5 - 3x^4 + 2x^3 - 8x^2 + 4x + 6$
j $-x^5 + x^4 - x^3 + x^2 - 2x + 1$

Exercise B

1 **a** $x^2 - 2x + 5$ **b** $2x^2 - 6x + 1$
c $-3x^2 - 12x + 2$

2 **a** $x^2 + 4x + 12$ **b** $2x^2 - x + 5$
c $-3x^2 + 5x + 10$

3 **a** $x^2 - 5$ **b** $2x^2 + 7$ **c** $-3x^2 - 4$

4 **a** -8 **b** -7 **c** -12

7 $(x + 4)(5x^2 - 20x + 7)$

8 $3x^2 + 6x + 4$

9 $x^2 + x + 1$

10 $x^3 - 2x^2 + 4x - 8$

Exercise C

2 $(x - 1)(x + 3)(x + 4)$

3 $(x + 1)(x + 7)(x - 5)$

4 $(x - 5)(x - 4)(x + 2)$

5 $(x - 2)(2x - 1)(x + 4)$

6 **a** $(x + 1)(x - 5)(x - 6)$
b $(x - 2)(x + 1)(x + 2)$
c $(x - 5)(x + 3)(x - 2)$

7 **a** $(x-1)(x+3)(2x+1)$ **b** $(x-3)(x-5)(2x-1)$
c $(x+1)(x+2)(3x-1)$ **d** $(x+2)(2x-1)(3x+1)$
e $(x-2)(2x-5)(2x+3)$

8 2

9 -16

10 $p = 3, q = 7$