

**C Level Questions**

1. Perform each operation below and write:

i. the polynomial in Standard Form    ii. the degree of the polynomial    iii. the leading coefficient.

a.  $(2x^3 + x^2 - x - 4) + (x^3 - 2x^2 + 4x - 2)$

i.  $3x^3 - x^2 + 3x - 6$

ii. degree = 3

iii. LC = 3

b.  $(x^2 - 4x - 5) - (3x^2 + x - 6)$

i.  $-2x^2 - 5x + 1$

ii. degree = 2

iii. LC = -2

c.  $(x - 6)(x^2 + 3x - 4)$

	$x^2 + 3x - 4$	
$x$	$x^3$	$3x^2 - 4x$
$-6$	$-6x^2$	$-18x + 24$

i.  $x^3 - 3x^2 - 22x + 24$

ii. degree = 3

iii. LC = 1

d.  $\frac{x^3 + 7x^2 + 9x - 2}{x + 2}$

	$x^2 + 5x - 1$	
$x$	$x^3$	$5x^2 - 1x$
$2$	$2x^2$	$10x - 2$

i.  $x^2 + 5x - 1$

ii. degree = 2

iii. LC = 1

2. Factor each polynomial fully.

a.  $x^2 + 6x - 16$

$(x + 8)(x - 2)$

b.  $2x^2 + 7x - 15$

$(2x - 3)(x + 5)$

c.  $(x^2 - 1)(x^2 - 4)$

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

	$2x - 3$	
$x$	$2x^2$	$3x$
$5$	$10x$	$-15$

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1. Perform each operation below and write:

- i. the polynomial in Standard Form    ii. the degree of the polynomial    iii. the leading coefficient.

a.  $(2x^3 - x^2 - x - 4) + (x^3 - 2x^2 + 4x + 2)$

$3x^3 - 3x^2 + 3x - 2$   
 degree = 3  
 LC = 3

b.  $(x^2 + 4x - 5) - (3x^2 - x - 6)$

$-2x^2 + 5x + 1$   
 degree = 2  
 LC = -2

c.  $(x - 6)(x^2 - 4x + 3)$

	$x^2$	$-4x$	$+3$
$x$	$x^3$	$-4x^2$	$3x$
$-6$	$-6x^2$	$24x$	$-18$

$x^3 - 10x^2 + 27x - 18$   
 degree = 3  
 LC = 1

d.  $\frac{x^3 - 4x^2 - 17x + 60}{x - 3}$

	$x^2$	$-x$	$-20$
$x$	$x^3$	$-1x^2$	$-20x$
$-3$	$-3x^2$	$3x$	$60$

$x^2 - x - 20$   
 degree = 2  
 LC = 1

2. Factor each polynomial:

a.  $x^2 + 5x - 66$

$(x + 11)(x - 6)$

b.  $3x^2 + 11x - 4$

	$3x$	$-1$
$x$	$3x^2$	$-x$
$+4$	$12x$	$-4$

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

c.  $(x^2 - 9)(x^2 - 1)$

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

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1. Perform each operation below and write:

- i. the polynomial in Standard Form    ii. the degree of the polynomial    iii. the leading coefficient.

a.  $(2x^3 - x^2 + x - 2) + (x^3 - 3x^2 + 4x + 2)$

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

degree = 3

LC = 3

b.  $(x^2 + 5x - 1) - (4x^2 + x - 6)$

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

degree = 2

LC = -3

c.  $(x+2)(x^2 - 5x + 4)$

	$x^2$	$-5x$	$4$
$x$	$x^3$	$-5x^2$	$4x$
$+2$	$2x^2$	$-10x$	$8$

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

degree = 3

LC = 1

d.  $\frac{x^3 - 11x^2 - 2x + 120}{x - 4}$

	$x^2$	$-7x$	$-30$
$x$	$x^3$	$-7x^2$	$-30x$
$-4$	$-4x^2$	$28x$	$120$

$$x^2 - 7x - 30$$

degree = 2

LC = 1

2. Factor each polynomial:

a.  $x^2 + 4x - 32$

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

b.  $2x^2 - 13x + 20$

	$2x$	$-5$
$x$	$2x^2$	$5x$
$-4$	$8x$	$20$

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

c.  $(x^2 - 25)(x^2 - 4)$

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

**C Level Questions**

1. Perform each operation below and write:

- i. the polynomial in Standard Form    ii. the degree of the polynomial    iii. the leading coefficient.

a.  $(x^3 - 3x^2 + x - 1) + (2x^3 - 3x^2 + 4x + 2)$

$$3x^3 - 6x^2 + 5x + 1$$

degree = 3  
LC = 3

b.  $(2x^2 + 3x - 1) - (4x^2 + x - 6)$

$$-2x^2 + 2x + 5$$

degree = 2  
LC = -2

c.  $(x+4)(x^2 - 5x - 6)$

	$x^2$	$-5x$	$-6$
$x$	$x^3$	$-5x^2$	$-6x$
$+4$	$4x^2$	$-20x$	$-24$

$$x^3 - x^2 - 26x - 24$$

degree = 3  
LC = 1

d.  $\frac{x^3 - 11x^2 - 2x + 120}{x+3}$

	$x^2$	$-14x$	$+40$
$x$	$x^3$	$-14x^2$	$40x$
$+3$	$3x^2$	$-42x$	$120$

$$x^2 - 14x + 40$$

degree = 2  
LC = 1

2. Factor each polynomial:

a.  $x^2 + 5x - 36$

$$(x+9)(x-4)$$

b.  $2x^2 - 9x - 18$

	$2x$	$+3$
$x$	$2x^2$	$3x$
$-6$	$+12x$	$-18$

$$(2x+3)(x-6)$$

c.  $(x^2 - 25)(x^2 - 16)$

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