

1	$3x^3 - 3x^2 + 4x - 9$ ✓ ✓	12	$12(2x-1)$ ✓ ✓
2	$3x^2 + 2x + 14$ ✓ ✓	13	$(2x+5)(4x-5)$ ✓ ✓
3	$15x^2 + 6x$ ✓ ✓	14	$(x^2-7)(x-3)$ ✓ ✓
4	$6x^2 + 11x - 10$ ✓ ✓	15	$(x-4)(x+3)$ ✓ ✓
5	$x^2 - 6x + 9$ ✓ ✓	16	$(x+6)(x+6)$ ✓ ✓
6	$2x^3 - 2x^2 - 10x + 21$ ✓ ✓	17	$(x+5)(x-3)$ ✓ ✓
7	$x^2 + 2x - 8$ ✓ ✓	18	$(x-7)(x-4)$ ✓ ✓
8	$4x^2 - 9$ ✓ ✓	19	$(3x-1)(x+1)$ ✓ ✓
9	$3x^2 - 4x$ ✓ ✓	20	$(2x-1)(x+6)$ ✓ ✓
10	$3x^2 - 2x + 4$ ✓ ✓	21	$(5x+2)(x-1)$ ✓ ✓
11	$4x(4x-5)$ ✓ ✓	22	$(3x-2)(3x-1)$ ✓ ✓

East Los Angeles College
Department of Mathematics
Math 115
Test 4

Solutions

Add/Subtract the following polynomials.

1. $(2x^3 - x^2 + 3x - 5) + (x^3 - 2x^2 + x - 4)$ 2. $(4x^2 - 5x + 3) - (x^2 - 7x - 11)$

Multiply the following polynomials.

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

4. $(2x + 5)(3x - 2)$

5. $(x - 3)^2$

6. $(x - 3)(2x^2 + 4x - 7)$

7. $(x + 4)(x - 2)$

8. $(2x + 3)(2x - 3)$

Divide the following polynomials.

9. $\frac{15x^3 - 20x^2}{5x}$

10. $\frac{9x^3 - 6x^2 + 12x}{3x}$

Factor out the GCF

11. $16x^2 - 20x$

12. $24x - 12$

Factor by grouping

13. $8x^2 - 10x + 20x - 25$

14. $x^3 - 3x^2 - 7x + 21$

Factor

15. $x^2 - x - 12$

16. $x^2 + 12x + 36$

17. $x^2 + 2x - 15$

18. $x^2 - 11x + 28$

19. $3x^2 + 2x - 1$

20. $2x^2 + 11x - 6$

21. $5x^2 - 3x - 2$

22. $9x^2 - 9x + 2$

Math 115 Test 4

$$(1) (2x^3 - x^2 + 3x - 5) + (x^3 - 2x^2 + x - 4)$$

$$\begin{array}{r} \underline{2x^3} - \underline{x^2} + \underline{3x} - \underline{5} + \underline{x^3} - \underline{2x^2} + \underline{x} - \underline{4} \\ \hline 3x^3 - 3x^2 + 4x - 9 \end{array}$$

$$(2) (4x^2 - 5x + 3) - (x^2 - 7x - 11)$$

$$\begin{array}{r} \underline{4x^2} - \underline{5x} + \underline{3} - \underline{x^2} + \underline{7x} + \underline{11} \\ \hline 3x^2 + 2x + 14 \end{array}$$

$$(3) 3x(5x + 2) = 3x \cdot 5x + 3x \cdot 2$$

$$\underline{15x^2 + 6x}$$

$$(4) (2x + 5)(3x - 2) = 6x^2 - 4x + 15x - 10$$

	3x	-2
2x	6x ²	-4x
5	15x	-10

$$\underline{6x^2 + 11x - 10}$$

$$(5) (x - 3)^2 = (x - 3)(x - 3)$$

	x	-3
x	x ²	-3x
-3	-3x	9

$$x^2 - 3x - 3x + 9$$

$$\underline{x^2 - 6x + 9}$$

(6) $(x-3)(2x^2 + 4x - 7)$

	$2x^2$	$4x$	-7
x	$2x^3$	$4x^2$	$-7x$
-3	$-6x^2$	$-12x$	21

$| 2x^3 - 2x^2 - 19x + 21 |$

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

	x	-2
x	x^2	$-2x$
4	$4x$	-8

$| x^2 + 2x - 8 |$

(8) $(2x+3)(2x-3)$

	$2x$	-3
$2x$	$4x^2$	$-6x$
3	$6x$	-9

$| 4x^2 - 9 |$

(9) $\frac{15x^3 - 20x^2}{5x} = \frac{15x^3}{5x} - \frac{20x^2}{5x}$

$= | 3x^2 - 4x |$

$$(10) \quad \frac{9x^3 - 6x^2 + 12x}{3x}$$

$$\frac{9x^3}{3x} - \frac{6x^2}{3x} + \frac{12x}{3x}$$
$$\underline{\underline{| 3x^2 - 2x + 4 |}}$$

$$(11) \quad 16x^2 - 20x = \underline{\underline{| 4x(4x-5) |}}$$

$$(12) \quad 24x - 12 = \underline{\underline{| 12(2x-1) |}}$$

$$(13) \quad 8x^2 - 10x + 20x - 25$$
$$2x(4x-5) + 5(4x-5)$$
$$\underline{\underline{| (2x+5)(4x-5) |}}$$

$$(14) \quad x^3 - 3x^2 - 7x + 21$$
$$x^2(x-3) - 7(x-3)$$
$$\underline{\underline{| (x^2-7)(x-3) |}}$$

$$(15) \quad x^3 - x - 12$$
$$\underline{\underline{| (x-4)(x+3) |}}$$

$$(16) \quad x^2 + 12x + 36$$
$$\underline{\underline{| (x+6)(x+6) |}}$$

$$(17) \quad x^2 + 2x - 15$$
$$\underline{\underline{| (x+5)(x-3) |}}$$

$$(18) \quad x^2 - 11x + 28$$
$$\underline{\underline{| (x-7)(x-4) |}}$$

$$(19) \quad \frac{3x^2 + 2x - 1}{(3x - 1)(x + 1)}$$

$$(20) \quad \frac{2x^2 + 11x - 6}{(2x - 1)(x + 6)}$$

$$(21) \quad \frac{5x^2 - 3x - 2}{(5x + 2)(x - 1)}$$

$$(22) \quad \frac{9x^2 - 9x + 2}{(3x - 2)(3x - 1)}$$