Exam

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Add or subtract as indicated. Express the answer as a single polynomial in standard form.

1) $(-7x^2 + 8) - (-x^3 + 3x^2 + 4)$

   A) $-6x^3 + 3x^2 + 4$ B) $x^3 - 4x^2 + 12$ C) $x^3 - 10x^2 + 4$ D) $-6x^3 + 11x^2 - 4$

   1) _____

2) $(5x^5 - 13x^3 - 14) - (7x^5 + 16x^3 - 4)$

   A) $-2x^5 - 29x^3 - 18$

   C) $-41x^8$

   B) $-2x^5 - 29x^3 - 10$

   D) $-2x^5 - 6x^3 - 18$

   2) _____

3) $(2x^7 - 18x^6 + 14) - (8x^6 + 7x^7 + 3)$

   A) $-20x^{13}$

   C) $-5x^7 - 26x^6 + 11$

   B) $-5x^7 - 26x^6 + 17$

   D) $-5x^7 - 11x^6 + 17$

   3) _____

4) $(3x^5 + 9x^4 + 6x) + (7x^5 - 6x^4 + 7x)$

   A) $10x^5 + 3x^4 + 13x$

   C) $10x + 3x^5 + 13x^4$

   B) $26x^{10}$

   D) $13x^5 - 3x^4 + 16x$

   4) _____

Multiply the polynomials using the FOIL method. Express the answer as a single polynomial in standard form.

5) $(-2x - 12)(-2x - 10)$

   A) $4x^2 + 44x + 120$

   C) $-4x^2 + 44x + 44$

   B) $4x^2 + 44x + 44$

   D) $-4x^2 + 44x + 120$

   5) _____

6) $(x + 7y)(x - 11y)$

   A) $x - 4xy - 77y$ B) $x^2 - 4xy - 77y^2$ C) $x^2 - 4xy - 4y^2$ D) $x^2 - 7xy - 77y^2$

   6) _____

7) $(x - 7y)(4x - 8y)$

   A) $x^2 - 36xy + 56y^2$

   C) $x^2 - 36xy - 36y^2$

   B) $4x^2 - 36xy - 36y^2$

   D) $4x^2 - 36xy + 56y^2$

   7) _____

8) $(-2x + 10y)(5x + 6y)$

   A) $-10x^2 + 50xy + 60y^2$

   C) $-10x^2 - 12xy + 60y^2$

   B) $-10x^2 + 38xy + 38y^2$

   D) $-10x^2 + 38xy + 60y^2$

   8) _____

Multiply the polynomials. Express the answer as a single polynomial in standard form.

9) $(9y + x)(9y - x)$

   A) $81y^2 - x^2$

   C) $81y^2 + 18xy - x^2$

   B) $81y^2 - 18xy - x^2$

   D) $18y^2 - x^2$

   9) _____

10) $(8x - 5)^2$

   A) $8x^2 + 25$ B) $64x^2 - 80x + 25$ C) $8x^2 - 80x + 25$ D) $64x^2 + 25$

   10) _____

11) $(b - z)^2$

    A) $b^2 - 2bz - z^2$ B) $b^2 + 2bz + z^2$ C) $b^2 - bz + z^2$ D) $b^2 - 2bz + z^2$

11) _____

12) $(8x + 3y)^2$

    A) $64x^2 + 9y^2$ B) $64x^2 + 48xy + 9y^2$

    C) $8x^2 + 48xy + 9y^2$ D) $8x^2 + 9y^2$

12) _____

Find the quotient and the remainder.

13) $18x^8 - 30x^3$ divided by $6x$

    A) $18x^7 - 30x^2$; remainder 0   B) $3x^9 - 5x^4$; remainder 0

    C) $3x^8 - 5x^3$; remainder 0   D) $3x^7 - 5x^2$; remainder 0

13) _____

14) $35x^2 + 10x - 11$ divided by $5x$

    A) $7x - 9$; remainder 0   B) $7x^2 + 2x - \dfrac{11}{5}$; remainder 0

    C) $35x + 10$; remainder -11   D) $7x + 2$; remainder -11

14) _____

Factor the difference of two squares.

15) $9 - x^2$

    A) prime   B) $(3 + x)^2$ C) $(3 - x)^2$ D) $(3 - x)(3 + x)$

15) _____

16) $x^3 - 512$

    A) $(x - 8)(x^2 + 64)$ B) $(x + 512)(x^2 - 1)$

    C) $(x - 8)(x^2 + 8x + 64)$ D) $(x + 8)(x^2 - 8x + 64)$

16) _____

17) $x^3 + 729$

    A) $(x - 729)(x^2 - 1)$ B) $(x - 9)(x^2 + 9x + 81)$

    C) $(x + 9)(x^2 + 81)$ D) $(x + 9)(x^2 - 9x + 81)$

17) _____

Factor the polynomial.

18) $x^2 + 3x - 10$

    A) $(x - 5)(x + 1)$ B) $(x - 5)(x + 2)$ C) $(x + 5)(x - 2)$ D) prime

18) _____

19) $x^2 + 36$

    A) $(x + 6)^2$ B) $(x - 6)^2$ C) $(x + 6)(x - 6)$ D) prime

19) _____

Factor completely. If the polynomial cannot be factored, say it is prime.

20) $7x^2 - 7x - 42$

    A) $7(x - 2)(x + 3)$ B) $7(x + 2)(x - 3)$ C) $(7x + 14)(x - 3)$ D) prime

20) _____

21) $5x^2 - 35x + 60$

    A) $5(x - 4)(x - 3)$ B) $(x - 4)(5x - 15)$ C) $5(x - 12)(x + 1)$ D) prime

21) _____

22) $15x^2 - 65x - 50$

    A) $(15x + 10)(x - 5)$ B) $5(3x - 2)(x + 5)$ C) $5(3x + 2)(x - 5)$ D) prime

22) _____

23) $6x^2 - 21x - 12$

    A) $3(2x - 1)(x + 4)$ B) $3(2x + 1)(x - 4)$ C) $(6x - 3)(x + 4)$ D) prime

23) _____

Use synthetic division to find the quotient and the remainder.

24) $x^5 + 8x^4 + 13x^3 - 8x^2 + 12x + 13$ is divided by $x + 5$

    A) $x^4 + 3x^3 - 2x^2 + 2x + 2$; remainder 3   B) $x^4 + 3x^3 - 2x^2 + 2x + 3$; remainder 0

    C) $x^3 + 3x^2 - 2x + 2$; remainder 3   D) $x^4 + 3x^3 - 2x^2 + 2x - 2$; remainder 5

24) _____

25) $x^4 - 4$ is divided by $x - 3$

    A) $x^3 + 3x^2 + 9x + 27$; remainder 77   B) $x^3 + 3x^2 + 9x + 27$; remainder 253

    C) $x^3 + 4x^2 + 16x + 64$; remainder 253   D) $x^3 + 7x^2 + 6x + 3$; remainder 77

25) _____