

Ms. Chan Algebra 2 Ch. 6 Practice Test

Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question.

- _____ 1. Write $-2x^2(-5x^2 - 2x^3)$ in standard form. Then classify it by degree and number of terms.
a. $-7x^5 + 10x^4$; quintic trinomial
b. $4x^5 + 10x^4$; quartic binomial
c. $-7x - 4x^4$; quintic binomial
d. $4x^5 + 10x^4$; quintic binomial
- _____ 2. Write $5x^3 + 30x^2 + 40x$ in factored form.
a. $2x(x + 4)(x + 5)$
b. $5x(x + 4)(x - 2)$
c. $5x(x + 2)(x + 4)$
d. $4x(x + 5)(x + 2)$
- _____ 3. Divide $-4x^3 - 3x^2 - 3x - 2$ by $x + 4$.
a. $-4x^2 + 13x - 55$, R 218
b. $-4x^2 - 19x + 49$, R -222
c. $-4x^2 + 13x - 55$
d. $-4x^2 - 19x + 49$

Divide using synthetic division.

- _____ 4. $(x^4 + 20x^3 + 61x^2 - 3x + 36) \div (x + 4)$
a. $x^3 + 16x^2 - 3x + 9$
b. $x^3 - 12x^2 + 67x - 21$
c. $x^3 + 20x^2 - 12x - 21$
d. $x^3 - 3x^2 + 9x + 16$

Factor the expression.

- _____ 5. $x^3 - 216$
a. $(x + 6)(x^2 - 6x + 36)$
b. $(x + 6)(x^2 + 6x + 36)$
c. $(x - 6)(x^2 - 6x + 72)$
d. $(x - 6)(x^2 + 6x + 36)$
- _____ 6. $c^3 - 512$
a. $-(c - 8)(c^2 + 8c + 64)$
b. $(c - 8)(c^2 + 8c + 64)$
c. $(c + 8)(c^2 + 8c + 64)$
d. $(c - 8)(c^2 - 8c - 64)$
- _____ 7. $x^4 - 34x^2 + 225$
a. no solution
b. $(x - 5)(x + 5)(x - 3)(x + 3)$
c. $(x - 5)(x - 5)(x + 3)(x + 3)$
d. $(x - 5)(x - 3)(x^2)$
- _____ 8. Solve $x^4 - 61x^2 = -900$.
a. 6, -5
b. 6, -6, 5, -5
c. no solution
d. 6, -6
- _____ 9. Use the Rational Root Theorem to list all possible rational roots of the polynomial equation $x^3 + 4x^2 - 5x + 2 = 0$. Do not find the actual roots.
a. -2, 2
b. -2, -1, 1, 2
c. no roots
d. 1, 2

Find the roots of the polynomial equation.

- _____ 10. $2x^3 + 2x^2 - 19x + 20 = 0$
 a. $\frac{3+i}{2}, \frac{3-i}{2}, -4$ c. $\frac{-3+i}{2}, \frac{-3-i}{2}, -4$
 b. $\frac{-3+2i}{2}, \frac{-3-2i}{2}, 4$ d. $\frac{3+2i}{2}, \frac{3-2i}{2}, 4$
- _____ 11. A polynomial equation with rational coefficients has the roots $2 + \sqrt{5}, 1 - \sqrt{5}$. Find two additional roots.
 a. $5 - \sqrt{2}, 5 + \sqrt{1}$ c. $2 + \sqrt{5}, 1 - \sqrt{5}$
 b. $2 - \sqrt{5}, 1 + \sqrt{5}$ d. $5 + \sqrt{2}, 5 - \sqrt{1}$
- _____ 12. Find a third-degree polynomial equation with rational coefficients that has roots -4 and $5 + i$.
 a. $x^3 - 6x^2 - 14x + 104 = 0$ c. $x^3 - 10x^2 + 26x = 0$
 b. $x^3 - 6x^2 - 10x + 26 = 0$ d. $x^3 - 6x^2 - 14x = 0$
- _____ 13. For the equation $6x^4 + 7x^3 - 4 = 0$, find the number of complex roots and the possible number of real roots.
 a. 4 complex roots; 0, 2 or 4 real roots
 b. 3 complex roots; 0, 2 or 4 real roots
 c. 4 complex roots; 1 or 3 real roots
 d. 3 complex roots; 1 or 3 real roots
- _____ 14. In how many different orders can you line up 4 cards on a shelf?
 a. 24 b. 4 c. 12 d. 1

Evaluate the expression.

- _____ 15. ${}_9P_3$
 a. 9 b. 84 c. 504 d. 362,880
- _____ 16. ${}_8C_4$
 a. 1 b. 1,680 c. 70 d. 10
- _____ 17. $\frac{10!}{3!}$
 a. 604,800 b. 720 c. 120 d. $\frac{10}{3}$
- _____ 18. $\frac{7!}{4!3!}$
 a. 13 b. 35 c. 79 d. 840
- _____ 19. $\frac{{}_{60}C_3}{{}_{15}C_3}$
 a. 14,190 b. 4 c. 8,555 d. $\frac{6844}{91}$
- _____ 20. Use the Binomial Theorem to expand $(d + 4b)^3$.
 a. $d^3 + 12d^2b + 48db^2 + 64b^3$
 b. $d^3 - 12d^2b + 48db^2 - 64b^3$
 c. $d^3 - 3d^2b + 3db^2 - b^3$
 d. $d^3 + 3d^2b + 3db^2 + b^3$

Use Pascal's Triangle to expand the binomial.

- _____ 21. $(d - 4)^6$
- $d^6 - 6d^5 + 15d^4 - 20d^3 + 15d^2 - 6d + 1$
 - $d^6 + 24d^5 + 240d^4 + 1280d^3 + 3840d^2 + 6144d + 4096$
 - $d^6 - 24d^5 + 240d^4 - 1280d^3 + 3840d^2 - 6144d + 4096$
 - $d^6 + 6d^5 + 15d^4 + 20d^3 + 15d^2 + 6d + 1$
- _____ 22. $(d + 6)^7$
- $d^7 + 7d^6 + 21d^5 + 35d^4 + 35d^3 + 20d^2 + 7d + 1$
 - $d^7 - 7d^6 + 21d^5 - 35d^4 + 35d^3 - 20d^2 + 7d - 1$
 - $d^7 + 42d^6 + 756d^5 + 7560d^4 + 45360d^3 + 163296d^2 + 326592d + 279936$
 - $d^7 - 42d^6 + 756d^5 - 7560d^4 + 45360d^3 - 163296d^2 + 326592d - 279936$
- _____ 23. There are 9 students participating in a spelling bee. In how many ways can the students who go first and second in the bee be chosen?
- 1 way
 - 72 ways
 - 36 ways
 - 362,880 ways
- _____ 24. In how many ways can 3 singers be selected from 7 who came to an audition?
- 7
 - 1
 - 35
 - 210
- _____ 25. A manufacturer of shipping boxes has a box shaped like a cube. The side length is $2a + 3b$. What is the volume of the box in terms of a and b ?
- $8a^3 - 36a^2b + 54ab^2 - 27b^3$
 - $8a^3 + 36a^2b + 54ab^2 + 27b^3$
 - $a^3 - 3a^2b + 3ab^2 - b^3$
 - $a^3 + 3a^2b + 3ab^2 + b^3$

**Ms. Chan Algebra 2 Ch. 6 Practice Test
Answer Section**

MULTIPLE CHOICE

1. ANS: D DIF: L2 REF: 6-1 Polynomial Functions
OBJ: 6-1.1 Exploring Polynomial Functions STO: FL MA.D.1.4.1, FL MA.E.1.4.1
2. ANS: C DIF: L1 REF: 6-2 Polynomials and Linear Factors
OBJ: 6-2.1 The Factored Form of a Polynomial STO: FL MA.B.1.4.1, FL MA.D.1.4.1
3. ANS: A DIF: L1 REF: 6-3 Dividing Polynomials
OBJ: 6-3.1 Using Long Division STO: FL MA.A.3.4.2
4. ANS: A DIF: L2 REF: 6-3 Dividing Polynomials
OBJ: 6-3.2 Using Synthetic Division STO: FL MA.A.3.4.2
5. ANS: D DIF: L1 REF: 6-4 Solving Polynomial Equations
OBJ: 6-4.2 Solving Equations by Factoring STO: FL MA.A.2.4.3, FL MA.A.3.4.2
6. ANS: B DIF: L1 REF: 6-4 Solving Polynomial Equations
OBJ: 6-4.2 Solving Equations by Factoring STO: FL MA.A.2.4.3, FL MA.A.3.4.2
7. ANS: B DIF: L1 REF: 6-4 Solving Polynomial Equations
OBJ: 6-4.2 Solving Equations by Factoring STO: FL MA.A.2.4.3, FL MA.A.3.4.2
8. ANS: B DIF: L1 REF: 6-4 Solving Polynomial Equations
OBJ: 6-4.2 Solving Equations by Factoring STO: FL MA.A.2.4.3, FL MA.A.3.4.2
9. ANS: B DIF: L1 REF: 6-5 Theorems About Roots of Polynomial Equations
OBJ: 6-5.1 The Rational Root Theorem STO: FL MA.A.2.4.3, FL MA.A.3.4.2, FL MA.D.1.4.1
10. ANS: A DIF: L1 REF: 6-5 Theorems About Roots of Polynomial Equations
OBJ: 6-5.1 The Rational Root Theorem STO: FL MA.A.2.4.3, FL MA.A.3.4.2, FL MA.D.1.4.1
11. ANS: B DIF: L1 REF: 6-5 Theorems About Roots of Polynomial Equations
OBJ: 6-5.2 Irrational Root Theorem and Imaginary Root Theorem
STO: FL MA.A.2.4.3, FL MA.A.3.4.2, FL MA.D.1.4.1
12. ANS: A DIF: L1 REF: 6-5 Theorems About Roots of Polynomial Equations
OBJ: 6-5.2 Irrational Root Theorem and Imaginary Root Theorem
STO: FL MA.A.2.4.3, FL MA.A.3.4.2, FL MA.D.1.4.1
13. ANS: A DIF: L1 REF: 6-6 The Fundamental Theorem of Algebra
OBJ: 6-6.1 The Fundamental Theorem of Algebra STO: FL MA.A.3.4.2, FL MA.D.1.4.1
14. ANS: A DIF: L1 REF: 6-7 Permutations and Combinations
OBJ: 6-7.1 Permutations STO: FL MA.A.1.4.3, FL MA.D.1.4.1
15. ANS: C DIF: L1 REF: 6-7 Permutations and Combinations
OBJ: 6-7.1 Permutations STO: FL MA.A.1.4.3, FL MA.D.1.4.1
16. ANS: C DIF: L1 REF: 6-7 Permutations and Combinations
OBJ: 6-7.2 Combinations STO: FL MA.A.1.4.3, FL MA.D.1.4.1
17. ANS: A DIF: L1 REF: 6-7 Permutations and Combinations
OBJ: 6-7.1 Permutations STO: FL MA.A.1.4.3, FL MA.D.1.4.1
18. ANS: B DIF: L1 REF: 6-7 Permutations and Combinations
OBJ: 6-7.1 Permutations STO: FL MA.A.1.4.3, FL MA.D.1.4.1
19. ANS: D DIF: L3 REF: 6-7 Permutations and Combinations
OBJ: 6-7.2 Combinations STO: FL MA.A.1.4.3, FL MA.D.1.4.1

20. ANS: A DIF: L1 REF: 6-8 The Binomial Theorem
OBJ: 6-8.2 The Binomial Theorem STO: FL MA.A.3.4.3, FL MA.D.1.4.1
21. ANS: C DIF: L1 REF: 6-8 The Binomial Theorem
OBJ: 6-8.1 Binomial Expansion and Pascal's Triangle STO: FL MA.A.3.4.3, FL MA.D.1.4.1
22. ANS: C DIF: L1 REF: 6-8 The Binomial Theorem
OBJ: 6-8.1 Binomial Expansion and Pascal's Triangle STO: FL MA.A.3.4.3, FL MA.D.1.4.1
23. ANS: B DIF: L1 REF: 6-7 Permutations and Combinations
OBJ: 6-7.1 Permutations STO: FL MA.A.1.4.3, FL MA.D.1.4.1
24. ANS: C DIF: L2 REF: 6-7 Permutations and Combinations
OBJ: 6-7.2 Combinations STO: FL MA.A.1.4.3, FL MA.D.1.4.1
25. ANS: B DIF: L2 REF: 6-8 The Binomial Theorem
OBJ: 6-8.1 Binomial Expansion and Pascal's Triangle STO: FL MA.A.3.4.3, FL MA.D.1.4.1