

Intermediate Algebra
Chapter 5 & Sec 6.7 Practice Test, Calculator Allowed

I. Evaluate.

1. $f(x) = -2x^2 + 7$ at $x = -3$

2. $f(x) = -x^2 + 7x - 3$ at $x = -3$

II. Multiply and Simplify.

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

4. $\frac{2}{7}x(21x^2 - 14x + 35)$

5. $(4y + 3)(y^2 + 2y + 3)$

III. Factor Completely.

6. $x^4 - 81$

7. $-30x^2 - 25x + 30$

8. $125a^3 - 8b^3$

9. $16k^3m + 250m^4$

IV. Solve the following polynomial equations.

10. $2x^2 + 2 = 5x$

11. $2x^2 = 5x + 3$

V. Divide

12.
$$\frac{-28x^5 + 28x^4 - 16x^3}{-4x^4}$$

13. $(6x^4y^3 - 16x^2y^2 - 14x^3y) \div (-2x^2y)$

VI. Solve the problem.

14. The Cool Company determines that the supply function for its basic air conditioning unit is $S(p) = 40 + 0.008p^3$ and that its demand function is $D(p) = 200 - 0.16p^2$, where p is the price. Determine the price for which the supply equals the demand.

15. If a baseball is thrown upward at a velocity of 112 feet per second, then its height h above the ground can be modeled by $h(t) = -16t^2 + 96t$, where t is in seconds. Use factoring to determine how long it takes for the baseball to hit the ground.

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Answers:

1. $f(-3) = -11$
2. $f(-3) = -33$
3. $25x^2 - 30x + 9$
4. $6x^3 - 4x^2 + 10x$
5. $4y^3 + 11y^2 + 18y + 9$
6. $(x^2 + 9)(x + 3)(x - 3)$
7. $-5(3x - 2)(2x + 3)$
8. $(5a - 2b)(25a^2 + 10ab + 4b^2)$
9. $2m(2k + 5m)(4k^2 - 10km + 25m^2)$
10. $x = \frac{1}{2}, x = 2$
11. $x = \frac{-1}{2}, x = 3$
12. $7x - 7 + \frac{4}{x}$
13. $-3x^2y^2 + 8y + 7x$
14. \$21.86
15. 6 seconds