Algebra 2

4-Review

Take this test as you would take a test in class. When you are finished, check your work against the answers.

4-01

Simplify.

1. $(2x^2 + 3x - 4) + (-2x^2 - 5x + 7)$
2. $(5x^2 - 4) - (6x^2 + 4x + 17)$
3. $(2x^2 + 3x - 1)(x + 4)$
4. $(2x + 1)^2$

4-02

Factor.

5. $x^3 + 6x^2 + 5x$
6. $4x^3 + 2x^2 + 16x + 8$

Solve by factoring.

7. $3x^3 + 15x^2 + 18x = 0$
8. $2x^3 + 3x^2 - 8x = 12$

4-03

Divide with long division.

9. $(6x^3 + 13x^2 + 3x - 2) \div (2x^2 + 3x - 1)$
10. $(9x^3 + 6x^2 - 23x + 10) \div (3x - 2)$

Divide with synthetic division.

11. $(3x^3 + 7x^2 - 14x + 20) \div (x + 4)$
12. $(2x^4 + 3x^2 + 5x - 7) \div (x - 3)$

4-04

Use the remainder theorem to evaluate *f*(*x*) at the given *x* value.

13. $3x^3 - 2x^2 + x + 18$; x = 2
14. $x^4 - 5x^2 + 3x - 20$; x = −3

Determine whether the given binomial is a factor of *f*(*x*). Show work other than graphing.

15. $f(x) = x^3 - x^2 - 14x + 24; (x + 4)$
16. $f(x) = 6x^3 + x^2 - 5x - 2; (x - 1)$

4-05

List the possible rational zeros of the function.

17. $x^4 + 2x^2 - 4x + 16$
18. $2x^3 - 71x^2 + 40x - 8$

Find all the zeros of the function.

19. $f(x) = 6x^3 - 5x^2 - 12x - 4$
20. $f(x) = x^4 - x^3 + 2x^2 - 4x - 8$

Answers

1. $-2x + 3$
2. $-x^2 - 4x - 21$
3. $2x^3 + 11x^2 + 11x - 4$
4. $4x^2 + 4x + 1$
5. $x(x + 1)(x + 5)$
6. $2(2x + 1)(x^2 + 4)$
7. −3, −2, 0
8. −2, −3/2, 2
9. 3x + 2
10. $3x^2 + 4x - 5$
11. $3x^2 - 5x + 6 + \frac{-4}{x+4}$
12. $2x^3 + 6x^2 + 21x + 68 + \frac{197}{x-3}$
13. 36
14. 7
15. Yes
16. Yes
17. ±1, ±2, ±4, ±8, ±16
18. ±1/2, ±1, ±2, ±4, ±8
19. −2/3, −1/2, 2
20. −1, 2, ±2i