Algebra 2 w/Support Name_____

Review for Final Fall 2019

Date_____ Period____

Name each polynomial by degree and number of terms.

1) $-10b - 2$

2) $-4n^2$

Simplify each expression.

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

4) $(4v^2 + 4 - 6v^3) + (6v^4 - 3v^2 + 6)$

Find each product.

5) $(3x + 1)(7x - 5)$

6) $(2n + 3)(7n - 8)$

7) $(4a + 8)(a^2 + 2a - 1)$

Simplify.

8) $(2 - 4i) - (2 + 7i)$

9) $(-2 - i) + (-8 - 7i)$

10) $(-8 - 6i)^2$

11) $(-5 - 4i)^2$

Perform the indicated operation.

12) $g(a) = 4a - 3$
$h(a) = a^2 + 1$
Find $g(a) - h(a)$

13) $g(x) = 3x - 5$
$f(x) = x^2 - 2$
Find $g(x) + f(x)$

14) $g(a) = 3a + 2$
$f(a) = 3a - 3$
Find $g(f(a))$

15) $h(x) = x^2 + 1$
$g(x) = 3x$
Find $h(g(x))$

Factor each completely.

16) $8a^3 + 27$

17) $x^3 + 64$

18) $16b^3 + 12b^2 - 20b - 15$

19) $6m^3 + 42m^2 + 5m + 35$

Solve each equation by factoring.

20) $v^2 = -10 - 7v$

21) $n^2 = -3n + 28$

22) $5n^2 = 22n - 21$

23) $2v^2 + 9v = -9$

Find all rational zeros. One zero has been given.

24) $f(x) = x^3 + 5x^2 - 9x - 45;\ -3$

Find all zeros.

25) $f(x) = 5x^3 - 5x^2 + x - 1$

Write a polynomial function of least degree with integral coefficients that has the given zeros.

26) $-3,\ -4,\ 3$

27) $5,\ 3i$

Divide.

28) $(9x^3 + 24x^2 - 18x - 21) \div (x + 3)$

29) $(p^3 + 7p^2 - p) \div (p + 7)$

Simplify each expression.

30) $\dfrac{n^2 - n - 30}{n^2 + 4n - 60}$

31) $\dfrac{4x - 24}{x - 9} \cdot \dfrac{x + 4}{x^2 - 2x - 24}$

32) $\dfrac{m^2 + 3m - 70}{m + 2} \div \dfrac{m^2 + 5m - 50}{m - 5}$

33) $\dfrac{4p}{18p^2 - 6p} - \dfrac{p + 3}{18p^2 - 6p}$

34) $\dfrac{4}{p - 2} - \dfrac{6}{2p + 1}$

Solve each equation. Remember to check for extraneous solutions.

35) $\frac{1}{m^2} + \frac{1}{m} = \frac{6m - 9}{m^2}$

36) $\frac{a + 2}{a^2 + 7a + 12} + \frac{1}{a^2 + 7a + 12} = \frac{2}{a + 3}$

Identify any holes in the function.

37) $f(x) = \frac{x^2 - x - 12}{x^2 - 16}$

Identify the x-intercepts of the function.

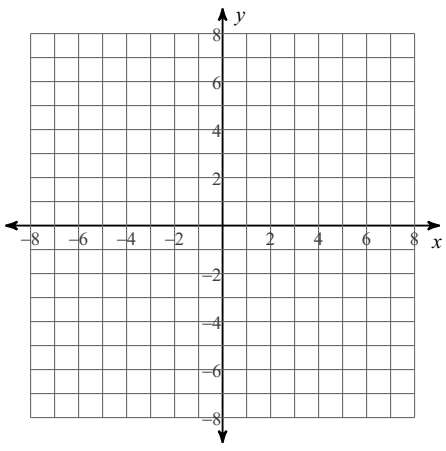
38) $f(x) = \frac{-2x + 4}{x + 2}$

Identify the vertical asymptotes of each.

39) $f(x) = \frac{x^2 - x}{3x - 9}$

Identify the holes, vertical asymptotes, x-intercepts, and horizontal asymptote of each. Then sketch the graph.

40) $f(x) = \frac{x^2 + x - 2}{x^2 + 3x + 2}$



41) $f(x) = \frac{x + 2}{x - 4}$