

Midterm Review Day #2

Date _____ Period _____

Simplify.

1) $\sqrt{36p^2}$

2) $7\sqrt{512x^2}$

3) $3\sqrt{24} - \sqrt{6}$

4) $4\sqrt{10p^2} \cdot -4\sqrt{6p}$

5) $\sqrt{15}(5 + \sqrt{6})$

6) $(-1 + \sqrt{2})(3 + \sqrt{2})$

7) $\frac{4}{3\sqrt{2} - \sqrt{3}}$

8) $\frac{2 + 3\sqrt{3}}{4 + \sqrt{2}}$

9) $\frac{\sqrt{5}}{\sqrt{2}}$

10) $\frac{5}{3 + 7i}$

11) $\frac{-4 - 3i}{10i}$

12) $\frac{10 - i}{7 - i}$

13) $(-3 - 2i)(2 - 8i)$

14) $-4 - 2i - (-2 + 7i)$

15) $-5 - 7i - 2i - (5 + 8i)$

Solve each equation by taking square roots.

16) $9x^2 + 1 = -175$

Solve each equation with the quadratic formula.

17) $12a^2 - 5a + 9 = 0$

18) $10b^2 + 4b - 7 = -9$

19) $8b^2 + 14b + 21 = 12 + 7b$

Solve each equation by factoring.

20) $b^2 - 42 = b$

21) $x^2 - 9x = -3x - 8$

Solve each equation by completing the square.

22) $x^2 + 4x - 23 = 0$

23) $n^2 - 10n + 36 = -2$

Divide, using long division or synthetic division.

24) $(7b^3 + 37b^2 + 8b - 10) \div (b + 5)$

25) $(x^4 - 6x^3 + 14x^2 - 42x - 14) \div (x - 5)$

State if the given binomial is a factor of the given polynomial, using long division or synthetic division to determine your answer.

26) $(r^3 - r^2 - 84r - 60) \div (r - 10)$

27) $(n^3 - 11n^2 + 6n + 40) \div (n - 10)$

Simplify each expression.

28) $(6x^4 + 4x^2 - 7x^3) - (5x^3 + 6x^4 + 7x^2)$

Name each polynomial by degree and number of terms.

29) $-7 + 8a^5 + 2a - 3a^6 + 6a^4$

Expand completely, using the Binomial Theorem.

30) $(2 - y)^4$

Perform the indicated operation.

31) $g(x) = x + 5$
 $f(x) = x^3 + 1 + 2x$
Find $(g \cdot f)(x)$

32) $g(n) = -n^3 - 4n$
 $h(n) = 3n - 4$
Find $(g \circ h)(n)$

33) $g(n) = n + 2$
 $h(n) = n^2 - 2n$
Find $(g \circ h)(6)$

34) $g(t) = 4t - 2$
 $f(t) = 2t + 1$
Find $(g - f)(7)$

Find the inverse of each function.

35) $f(x) = \sqrt{x + 3}$

State if the given functions are inverses. Use composition.

36) $f(x) = 2x - 5$
 $g(x) = \frac{1}{2}x + \frac{5}{2}$