Algebra 2 Name_____

Unit 1A Study Guide

Date_____

Factor each completely.

1) $x^2 + 7x - 18$

2) $n^2 + 12n + 20$

3) $x^2 - 15x + 56$

4) $x^2 + 3x - 28$

5) $5r^2 - 27r + 28$

6) $7p^2 - 39p + 20$

7) $5n^2 + 42n + 16$

8) $42n^2 + 96n - 90$

9) $28x^2 - 92x + 72$

10) $7a^2 - 33a - 10$

11) What is the value of i^3

12) What is the value of i^{27}

Add/Subtract the following expressions. (Reminder: Combine like terms)

13) $(-7 + 3i) - (1 - 7i) - (6i)$

14) $(7 - 2i) + (5 - 5i)$

15) $(-3 + 7i) - (3 - 8i)$

16) $(6 - 3i) + (-1 - 2i)$

Multiply the following expressions.

17) $(-2 - 7i)(3 - 7i)$

18) $(-1 + 4i)^2$

Divide the following expressions. (Reminder: Find the conjugate first)

19) $\dfrac{-9+9i}{-2i}$

20) $\dfrac{9i}{2-i}$

21) $\dfrac{6+8i}{-7-5i}$

22) $\dfrac{-4-9i}{10-i}$

Solve each equation by factoring.

23) $m^2 = -8m - 12$

24) $p^2 - 4p = 5$

25) $p^2 + p = 6$

26) $m^2 + 1 = -2m$

27) $4p^2 + 20p = 96$

28) $3x^2 + 9x = 0$

Solve each equation by taking square roots.

29) $-6 + 36r^2 = 30$

30) $7x^2 - 2 = -72$

31) $6a^2 + 3 = -54$

32) $8n^2 - 10 = 390$

Solve each equation by completing the square.

33) $a^2 + 6a + 1 = -7$

34) $n^2 - 12n + 41 = 9$

35) $3b^2 - 6b - 42 = 3$

36) $6x^2 - 12x + 37 = 6$

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Factor each completely.

1) $x^2 + 7x - 18$

$(x - 2)(x + 9)$

2) $n^2 + 12n + 20$

$(n + 2)(n + 10)$

3) $x^2 - 15x + 56$

$(x - 7)(x - 8)$

4) $x^2 + 3x - 28$

$(x - 4)(x + 7)$

5) $5r^2 - 27r + 28$

$(5r - 7)(r - 4)$

6) $7p^2 - 39p + 20$

$(7p - 4)(p - 5)$

7) $5n^2 + 42n + 16$

$(5n + 2)(n + 8)$

8) $42n^2 + 96n - 90$

$6(7n - 5)(n + 3)$

9) $28x^2 - 92x + 72$

$4(7x - 9)(x - 2)$

10) $7a^2 - 33a - 10$

$(7a + 2)(a - 5)$

11) What is the value of i^3

-i

12) What is the value of i^{27}

-i

Add/Subtract the following expressions. (Reminder: Combine like terms)

13) $(-7 + 3i) - (1 - 7i) - (6i)$

$-8 + 4i$

14) $(7 - 2i) + (5 - 5i)$

$12 - 7i$

15) $(-3 + 7i) - (3 - 8i)$

$-6 + 15i$

16) $(6 - 3i) + (-1 - 2i)$

$5 - 5i$

Multiply the following expressions.

17) $(-2 - 7i)(3 - 7i)$

$-55 - 7i$

18) $(-1 + 4i)^2$

$-15 - 8i$

Divide the following expressions. (Reminder: Find the conjugate first)

19) $\dfrac{-9+9i}{-2i}$

$\dfrac{-9i-9}{2}$

20) $\dfrac{9i}{2-i}$

$\dfrac{18i-9}{5}$

21) $\dfrac{6+8i}{-7-5i}$

$\dfrac{-41-13i}{37}$

22) $\dfrac{-4-9i}{10-i}$

$\dfrac{-31-94i}{101}$

Solve each equation by factoring.

23) $m^2 = -8m - 12$

$\{-6, -2\}$

24) $p^2 - 4p = 5$

$\{5, -1\}$

25) $p^2 + p = 6$

$\{2, -3\}$

26) $m^2 + 1 = -2m$

$\{-1\}$

27) $4p^2 + 20p = 96$

$\{3, -8\}$

28) $3x^2 + 9x = 0$

$\{-3, 0\}$

Solve each equation by taking square roots.

29) $-6 + 36r^2 = 30$

$\{1, -1\}$

30) $7x^2 - 2 = -72$

$\{i\sqrt{10}, -i\sqrt{10}\}$

31) $6a^2 + 3 = -54$

$\left\{\dfrac{i\sqrt{38}}{2}, -\dfrac{i\sqrt{38}}{2}\right\}$

32) $8n^2 - 10 = 390$

$\{5\sqrt{2}, -5\sqrt{2}\}$

Solve each equation by completing the square.

33) $a^2 + 6a + 1 = -7$

$\{-2, -4\}$

34) $n^2 - 12n + 41 = 9$

$\{8, 4\}$

35) $3b^2 - 6b - 42 = 3$

$\{5, -3\}$

36) $6x^2 - 12x + 37 = 6$

$\left\{\dfrac{6+5i\sqrt{6}}{6}, \dfrac{6-5i\sqrt{6}}{6}\right\}$