

Assignment

Date _____ Period _____

Use the discriminant to determine the number of real solutions to each equation.

1) $9x^2 - 6x + 5 = 4$

2) $-6x^2 + x + 5 = 3$

3) $-4n^2 - 8n - 14 = -10$

4) $-4n^2 + 9n + 16 = 9$

5) $-2b^2 - 8b - 1 = 7$

6) $2r^2 - 4r - 8 = -10$

7) $7x^2 + 6x - 8 = -7$

8) $10k^2 + k + 8 = 10$

9) $-x^2 + 4x + 3 = 7$

10) $-2n^2 + 4n + 8 = 9$

11) $4a^2 + 6 = 8$

12) $-k^2 + 6k - 19 = -10$

13) $5n^2 + 10n + 11 = 6$

14) $-9a^2 + 8a + 3 = -6$

15) $x^2 + 7x - 10 = -3$

16) $6x^2 - 9x + 15 = 9$

17) $6n^2 - 6n = -4$

18) $-10x^2 - 9x + 4 = 8$

19) $10x^2 + 7x - 8 = -9$

20) $9x^2 - 6x - 13 = -9$

Solve each equation with the quadratic formula.

21) $11b^2 + 11 = -10b$

22) $10x^2 - 12x = -8$

23) $x^2 = -10x - 12$

24) $2n^2 - 6n = 8$

25) $11n^2 = 3 - 2n$

26) $10x^2 - 8 = -5x$

27) $6b^2 + 8b = -10$

28) $9k^2 + 11k = -12$

$$29) 5n^2 - 8 = 6n$$

$$30) 4p^2 - 2p = -9$$

$$31) 9b^2 - 7b = 19$$

$$32) 11x^2 = -3x + 6$$

$$33) m^2 + 6m = 72$$

$$34) 5x^2 + x = -3$$

$$35) 8n^2 + 7 = -5n$$

$$36) 4n^2 + 2n = 12$$

$$37) 7x^2 = -12 - 7x$$

$$38) 5v^2 = 4v + 20$$

$$39) 3k^2 + 7k = 48$$

$$40) 6x^2 + 4x = 13$$

$$41) 2r^2 = 8r - 12$$

$$42) 7p^2 + 4 = 2p$$

$$43) k^2 = -12 + 8k$$

$$44) 2r^2 = 8r + 24$$

$$45) 11a^2 - 6a = 6$$

$$46) 12n^2 - 2n = 21$$

$$47) 7a^2 + 9a = -7$$

$$48) 9n^2 + 12n = -10$$

$$49) 4x^2 = 7x + 2$$

$$50) 6x^2 - 100 = x$$

$$51) 10k^2 = -9 - 6k$$

$$52) 8r^2 = -5 - 3r$$

53) $10n^2 - 6n = -1$

54) $6n^2 = -5n - 1$

55) $12n^2 = -9n + 23$

56) $4b^2 - 2b = 6$

57) $8a^2 - 10 = 4a$

58) $n^2 + 2n = -5$

59) $10n^2 = 4 - 5n$

60) $5x^2 = 104 - 6x$

Simplify.

61) $(-5 + 4i)^2$

62) $(-3 + 6i)^2$

63) $(4i) - (5 + 7i) - (3i)$

64) $(7 - 4i)(6 + 6i)$

65) $(-8i)(5 + 8i) + 5(-5 - 4i)$

66) $(-5i)(6 + 2i) + (5i)(-5 - 6i)$

67) $(i)(-8 - 4i) + 4(5 + i)$

68) $(7i)(-8i)(7 + 6i)$

69) $6(-6 + 8i) + 3(4 + i)$

70) $(3 - 4i)(-3 - 5i)$

71) $(1 + 8i) - (-6 - 5i)$

72) $8(8i) - 6(3 - i)$

73) $(i)(1 - 7i) - (5i)(1 + 7i)$

74) $(6i)(2 + 2i) - 4(-8 - 2i)$

75) $2(-2i) + (i)(4 + i)$

76) $(6i)(7i)(7 - 8i)$

77) $(1 - 2i) - (-5 - i)$

78) $(4 - 7i) + (-4 - 7i)$

79) $(-8 + 3i)^2$

80) $(-5i)(-7 + 7i) + (5i)(-8 - 7i)$

81) $(2 - 4i)(-3 - 7i)$

82) $(5i)(3i)(-7 + 4i)$

83) $(-3i)(8 - 6i) - (5i)(6 - 5i)$

84) $(1 + 2i)(-3 - 7i)$

85) $(6i)(-6i)(-6 - 8i)$

86) $(-7 - 5i) + (1 + 3i)$

87) $7(-6 - 3i) - 4(-2 + 8i)$

88) $(-8 - 7i)(-5 - 2i)$

89) $(-5i)(1 - 7i) - (4i)(-1 + i)$

90) $(-4i) - (-1 - 3i) - 2$

91) $-6(-2 - i) + (4i)(-2 - 5i)$

92) $(-7 + 2i)(8 + 8i)$

93) $(8i)(2i) - 3(-4 + i)$

94) $5(-6 - 4i) + 7(4 + 5i)$

95) $(-2 + 4i) - (-7 - i)$

96) $3(-1 + 4i) + (2i)(1 + 4i)$

97) $(2i)(-8i)(-2 - 4i)$

98) $(4i)(-2i)(-1 - 4i)$

99) $(1 - 7i) - (-7 + 4i)$

100) $6(7i) - 7(4 + 2i)$

Assignment

Date _____ Period _____

Use the discriminant to determine the number of real solutions to each equation.

1) $9x^2 - 6x + 5 = 4$

One

2) $-6x^2 + x + 5 = 3$

Two

3) $-4n^2 - 8n - 14 = -10$

One

4) $-4n^2 + 9n + 16 = 9$

Two

5) $-2b^2 - 8b - 1 = 7$

One

6) $2r^2 - 4r - 8 = -10$

One

7) $7x^2 + 6x - 8 = -7$

Two

8) $10k^2 + k + 8 = 10$

Two

9) $-x^2 + 4x + 3 = 7$

One

10) $-2n^2 + 4n + 8 = 9$

Two

11) $4a^2 + 6 = 8$

Two

12) $-k^2 + 6k - 19 = -10$

One

13) $5n^2 + 10n + 11 = 6$

One

14) $-9a^2 + 8a + 3 = -6$

Two

15) $x^2 + 7x - 10 = -3$

Two

16) $6x^2 - 9x + 15 = 9$

None

17) $6n^2 - 6n = -4$

None

18) $-10x^2 - 9x + 4 = 8$

None

19) $10x^2 + 7x - 8 = -9$

Two

20) $9x^2 - 6x - 13 = -9$

Two

Solve each equation with the quadratic formula.

21) $11b^2 + 11 = -10b$

$$\left\{ \frac{-5 + 4i\sqrt{6}}{11}, \frac{-5 - 4i\sqrt{6}}{11} \right\}$$

22) $10x^2 - 12x = -8$

$$\left\{ \frac{3 + i\sqrt{11}}{5}, \frac{3 - i\sqrt{11}}{5} \right\}$$

23) $x^2 = -10x - 12$

$$\{-5 + \sqrt{13}, -5 - \sqrt{13}\}$$

24) $2n^2 - 6n = 8$

$$\{4, -1\}$$

25) $11n^2 = 3 - 2n$

$$\left\{ \frac{-1 + \sqrt{34}}{11}, \frac{-1 - \sqrt{34}}{11} \right\}$$

26) $10x^2 - 8 = -5x$

$$\left\{ \frac{-5 + \sqrt{345}}{20}, \frac{-5 - \sqrt{345}}{20} \right\}$$

27) $6b^2 + 8b = -10$

$$\left\{ \frac{-2 + i\sqrt{11}}{3}, \frac{-2 - i\sqrt{11}}{3} \right\}$$

28) $9k^2 + 11k = -12$

$$\left\{ \frac{-11 + i\sqrt{311}}{18}, \frac{-11 - i\sqrt{311}}{18} \right\}$$

29) $5n^2 - 8 = 6n$

$$\left\{2, -\frac{4}{5}\right\}$$

31) $9b^2 - 7b = 19$

$$\left\{\frac{7 + \sqrt{733}}{18}, \frac{7 - \sqrt{733}}{18}\right\}$$

33) $m^2 + 6m = 72$

$$\{6, -12\}$$

35) $8n^2 + 7 = -5n$

$$\left\{\frac{-5 + i\sqrt{199}}{16}, \frac{-5 - i\sqrt{199}}{16}\right\}$$

37) $7x^2 = -12 - 7x$

$$\left\{\frac{-7 + i\sqrt{287}}{14}, \frac{-7 - i\sqrt{287}}{14}\right\}$$

39) $3k^2 + 7k = 48$

$$\left\{3, -\frac{16}{3}\right\}$$

41) $2r^2 = 8r - 12$

$$\{2 + i\sqrt{2}, 2 - i\sqrt{2}\}$$

43) $k^2 = -12 + 8k$

$$\{6, 2\}$$

45) $11a^2 - 6a = 6$

$$\left\{\frac{3 + 5\sqrt{3}}{11}, \frac{3 - 5\sqrt{3}}{11}\right\}$$

47) $7a^2 + 9a = -7$

$$\left\{\frac{-9 + i\sqrt{115}}{14}, \frac{-9 - i\sqrt{115}}{14}\right\}$$

49) $4x^2 = 7x + 2$

$$\left\{2, -\frac{1}{4}\right\}$$

51) $10k^2 = -9 - 6k$

$$\left\{\frac{-3 + 9i}{10}, \frac{-3 - 9i}{10}\right\}$$

30) $4p^2 - 2p = -9$

$$\left\{\frac{1 + i\sqrt{35}}{4}, \frac{1 - i\sqrt{35}}{4}\right\}$$

32) $11x^2 = -3x + 6$

$$\left\{\frac{-3 + \sqrt{273}}{22}, \frac{-3 - \sqrt{273}}{22}\right\}$$

34) $5x^2 + x = -3$

$$\left\{\frac{-1 + i\sqrt{59}}{10}, \frac{-1 - i\sqrt{59}}{10}\right\}$$

36) $4n^2 + 2n = 12$

$$\left\{\frac{3}{2}, -2\right\}$$

38) $5v^2 = 4v + 20$

$$\left\{\frac{2 + 2\sqrt{26}}{5}, \frac{2 - 2\sqrt{26}}{5}\right\}$$

40) $6x^2 + 4x = 13$

$$\left\{\frac{-2 + \sqrt{82}}{6}, \frac{-2 - \sqrt{82}}{6}\right\}$$

42) $7p^2 + 4 = 2p$

$$\left\{\frac{1 + 3i\sqrt{3}}{7}, \frac{1 - 3i\sqrt{3}}{7}\right\}$$

44) $2r^2 = 8r + 24$

$$\{6, -2\}$$

46) $12n^2 - 2n = 21$

$$\left\{\frac{1 + \sqrt{253}}{12}, \frac{1 - \sqrt{253}}{12}\right\}$$

48) $9n^2 + 12n = -10$

$$\left\{\frac{-2 + i\sqrt{6}}{3}, \frac{-2 - i\sqrt{6}}{3}\right\}$$

50) $6x^2 - 100 = x$

$$\left\{\frac{25}{6}, -4\right\}$$

52) $8r^2 = -5 - 3r$

$$\left\{\frac{-3 + i\sqrt{151}}{16}, \frac{-3 - i\sqrt{151}}{16}\right\}$$

53) $10n^2 - 6n = -1$

$$\left\{ \frac{3+i}{10}, \frac{3-i}{10} \right\}$$

55) $12n^2 = -9n + 23$

$$\left\{ \frac{-9 + \sqrt{1185}}{24}, \frac{-9 - \sqrt{1185}}{24} \right\}$$

57) $8a^2 - 10 = 4a$

$$\left\{ \frac{1 + \sqrt{21}}{4}, \frac{1 - \sqrt{21}}{4} \right\}$$

59) $10n^2 = 4 - 5n$

$$\left\{ \frac{-5 + \sqrt{185}}{20}, \frac{-5 - \sqrt{185}}{20} \right\}$$

54) $6n^2 = -5n - 1$

$$\left\{ -\frac{1}{3}, -\frac{1}{2} \right\}$$

56) $4b^2 - 2b = 6$

$$\left\{ \frac{3}{2}, -1 \right\}$$

58) $n^2 + 2n = -5$

$$\{-1 + 2i, -1 - 2i\}$$

60) $5x^2 = 104 - 6x$

$$\left\{ 4, -\frac{26}{5} \right\}$$

Simplify.

61) $(-5 + 4i)^2$

$$9 - 40i$$

63) $(4i) - (5 + 7i) - (3i)$

$$-5 - 6i$$

65) $(-8i)(5 + 8i) + 5(-5 - 4i)$

$$39 - 60i$$

67) $(i)(-8 - 4i) + 4(5 + i)$

$$24 - 4i$$

69) $6(-6 + 8i) + 3(4 + i)$

$$-24 + 51i$$

71) $(1 + 8i) - (-6 - 5i)$

$$7 + 13i$$

73) $(i)(1 - 7i) - (5i)(1 + 7i)$

$$42 - 4i$$

75) $2(-2i) + (i)(4 + i)$

$$-1$$

77) $(1 - 2i) - (-5 - i)$

$$6 - i$$

79) $(-8 + 3i)^2$

$$55 - 48i$$

81) $(2 - 4i)(-3 - 7i)$

$$-34 - 2i$$

83) $(-3i)(8 - 6i) - (5i)(6 - 5i)$

$$-43 - 54i$$

62) $(-3 + 6i)^2$

$$-27 - 36i$$

64) $(7 - 4i)(6 + 6i)$

$$66 + 18i$$

66) $(-5i)(6 + 2i) + (5i)(-5 - 6i)$

$$40 - 55i$$

68) $(7i)(-8i)(7 + 6i)$

$$392 + 336i$$

70) $(3 - 4i)(-3 - 5i)$

$$-29 - 3i$$

72) $8(8i) - 6(3 - i)$

$$-18 + 70i$$

74) $(6i)(2 + 2i) - 4(-8 - 2i)$

$$20 + 20i$$

76) $(6i)(7i)(7 - 8i)$

$$-294 + 336i$$

78) $(4 - 7i) + (-4 - 7i)$

$$-14i$$

80) $(-5i)(-7 + 7i) + (5i)(-8 - 7i)$

$$70 - 5i$$

82) $(5i)(3i)(-7 + 4i)$

$$105 - 60i$$

84) $(1 + 2i)(-3 - 7i)$

$$11 - 13i$$

$$85) (6i)(-6i)(-6 - 8i)$$
$$-216 - 288i$$

$$87) 7(-6 - 3i) - 4(-2 + 8i)$$
$$-34 - 53i$$

$$89) (-5i)(1 - 7i) - (4i)(-1 + i)$$
$$-31 - i$$

$$91) -6(-2 - i) + (4i)(-2 - 5i)$$
$$32 - 2i$$

$$93) (8i)(2i) - 3(-4 + i)$$
$$-4 - 3i$$

$$95) (-2 + 4i) - (-7 - i)$$
$$5 + 5i$$

$$97) (2i)(-8i)(-2 - 4i)$$
$$-32 - 64i$$

$$99) (1 - 7i) - (-7 + 4i)$$
$$8 - 11i$$

$$86) (-7 - 5i) + (1 + 3i)$$
$$-6 - 2i$$

$$88) (-8 - 7i)(-5 - 2i)$$
$$26 + 51i$$

$$90) (-4i) - (-1 - 3i) - 2$$
$$-1 - i$$

$$92) (-7 + 2i)(8 + 8i)$$
$$-72 - 40i$$

$$94) 5(-6 - 4i) + 7(4 + 5i)$$
$$-2 + 15i$$

$$96) 3(-1 + 4i) + (2i)(1 + 4i)$$
$$-11 + 14i$$

$$98) (4i)(-2i)(-1 - 4i)$$
$$-8 - 32i$$

$$100) 6(7i) - 7(4 + 2i)$$
$$-28 + 28i$$