

Name: _____ Class: _____ Date: _____

ID: A

Honors Pre-Calculus

Freedom High School Honors Math Summer Assignment

Your summer assignment is based upon the assumption that you have truly mastered the skills from your prior mathematics courses. Your teacher next year will be building upon these skills in your upcoming math course and will not reteach these skills from the beginning. If you are unsure how to proceed with a given topic, ask an older sibling or parent, seek help from friends, go online for help, or find tutoring in any fashion you can.

This assignment should be completed by the first day of your honors math class, whether that be in August or January. **This packet will not be collected or graded;** however, **you will be tested on the material within the first two weeks of the semester.** The intent of this packet is to solely insure that you have truly mastered all of the prerequisite skills that your next course will require you to have. There is not any new material in this packet. All of the topics are ones that have been taught in previous courses.

Once again, your teacher will start the semester with a test the first two weeks on all of the topics found in this packet. In theory, this should be a very good grade for you to start the year since you have seen all of the material before and you have the entire summer to prepare.

Good luck and enjoy your summer.

Sincerely,

Freedom High School Math Department

Useful websites:

<http://youtube.com>

<http://teachertube.com>

<http://mathforum.org/dr/math>

<https://www.pearsonsuccessnet.com/snpapp/login/login.jsp>

Login: LibertyHigh

Password: School1

<http://www.khanacademy.org/#browse>

Drop / Add Policy:

The following guidelines exist for all other schedule changes requested after August 1st:

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- 1) A schedule change request form must be completed by the student and parent. Forms are available in the Counseling Office or the teacher.
- 2) Schedule changes will be considered for valid educational reasons only. Schedule changes will not be made to accommodate requests for lateral moves within the same subject area or teacher preference.
- 3) The counselor and assigned teacher will review schedule change requests.
- 4) Quarter courses (half semester courses) will not be dropped after the first 5 days of class.
- 5) Full semester courses will not be dropped after the first 15 days of class.
- 6) All students must maintain a full schedule for the entire year.
- 7) Level changes will not be considered unless the student has a 75% or lower in the course.

Withdrawals from a course will not become part of the student record if the course is dropped within the first 15 days of a semester class and within the first 5 days of a quarter course (half semester course). A "W" (Withdrew) will be recorded after those days but prior to the end of the first quarter. Either a "WP" (Withdraw Passing) or "WF" (Withdraw Failing) will be recorded if the course is dropped after the first marking period, indicating the student's progress at the time of withdrawal.

A course change must be based upon academic considerations, and be facilitated by a conference/plan developed by the student, parent, teacher and counselor/grade level administrator to support student success. This plan will require tutoring, completion of all required work to date, and a sincere demonstration of effort and ability by the student prior to dropping a course or level of course for all classes in English, Social Studies, Math, Science and Foreign Language.

Solve each equation

1. $2x - 6 = 3 - x$

2. $2(3 + 2x) = 3(x - 4)$

3. $\frac{3}{2}x + 2 = \frac{1}{2} - \frac{1}{2}x$

4. $\frac{2}{3}p = \frac{1}{2}p + \frac{1}{3}$

5. $0.9x = 0.4 + 0.1x$

6. $\frac{x+1}{3} + \frac{x+2}{7} = 2$

7. $\frac{2}{y} + \frac{4}{y} = 3$

8. $(x+7)(x-1) = (x+1)^2$

9. $\frac{x}{x-2} + 3 = \frac{2}{x-2}$

10. $x^2 = 9x$

11. $4z^3 - 8z^2 = 0$

12. $\frac{8x+5}{10x-7} = \frac{4x-3}{5x+7}$

13. $3x^2 - 48 = 0$

14. $(x+1)^2 = 4$

15. $(3x-2)^2 = 4$

Factor each completely

16. $m^2 + 2m - 24$

17. $a^2 + 11a + 18$

18. $5n^2 + 10n + 20$

19. $2p^2 + 2p - 4$

20. $4v^2 - 4v - 8$

21. $5n^2 + 19n + 12$

22. $15n^2 - 27n - 6$

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23. $4x^2 - 35x + 49$

24. $6n^2 + 5n - 6$

25. $4m^2 - 25$

26. $4x^2 - 4x + 1$

27. $a^4 - 9$

28. $3 + 6b + 3b^2$

29. $10n^2 + 100n + 250$

30. $10p^3 - 1960p$

31. $343x^2 - 7x^4$

Solve Quadratic Equations by Factoring

32. $(2m + 3)(4m + 3) = 0$

33. $x^2 - 11x + 19 = -5$

34. $n^2 + 3n - 12 = 6$

35. $6n^2 - 18n - 18 = 6$

36. $5r^2 - 44r + 120 = -30 + 11r$

37. $35k^2 - 22k + 7 = 4$

38. $7x^2 + 2x = 0$

39. $15a^2 - 3a = 3 - 7a$

40. $x(x - 8) + 12 = 0$

41. $6(p^2 - 1) = 5p$

42. $x + \frac{12}{x} = 7$

43. $\frac{5}{x+4} = 4 + \frac{3}{x-2}$

Other

Simplify each expression.

44. 4^2

45. -4^2

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46. 4^{-2}

47. $\sqrt{50}$

48. $\sqrt[3]{24}$

49. $-\sqrt[3]{16}$

50. $\sqrt{36x}$

51. $\sqrt[4]{x^{12}y^8}$

52. $(-4)^2$

53. -4^{-2}

54. $(-4)^{-2}$

55. $(4^{-3})(4^5)$

56. $\left(\frac{3}{2}\right)^{-2}$

57. $\frac{-3^{-1}}{2^{-1}}$

58. $\frac{x^{-2}y^3}{xy^4}$

59. $x^{-2}y^{-2}$

60. $\frac{3x^{-2}yz^2}{x^4y^{-3}z^2}$

61. $\left(\frac{3x^{-1}}{4y^{-1}}\right)^{-2}$

62. $\frac{4x^2 + 8x}{12x + 24}$

63. $\frac{x^2 - 8x + 16}{x^2 - 16}$

64. $\sqrt{3x^2} \sqrt{12x}$

65. $\sqrt{\frac{9x^4}{16y^8}}$

66. $3\sqrt{2} + 4\sqrt{2}$

67. $-\sqrt{18} + 2\sqrt{8}$

Add, subtract , or multiply

68. $(x^3 + 3x^2 + 2) + (x^2 - 4x + 4)$

69. $\frac{3x+6}{5x^2} \cdot \frac{x}{x^2-4}$

70. $\frac{12}{x^2-x} \cdot \frac{x^2-1}{4x-2}$

71. $(x^2 - 3x - 4) - (x^3 - 3x^2 + x + 5)$

72. $\frac{\frac{6x}{x^2-4}}{\frac{3x-9}{2x+4}}$

73. $\frac{\frac{x-2}{4x}}{\frac{x^2-4x+4}{12x}}$

74. $(x^2 + 1) - (4x^2 + 5) + (x^2 + x - 2)$

75. $(2x-3)(x^2+x-1)$

76. $(2x+3y)(x-y)$

77. $(x-4)^2$

78. $(x+3y)(x-3y)$

79. $(x-2)^3$

80. $9\sqrt[3]{24} - \sqrt[3]{81}$

Solve using the Quadratic Formula. (Be sure to memorize this important formula)

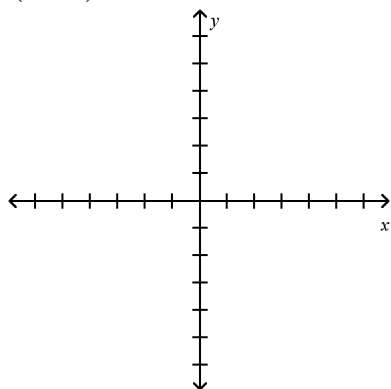
81. $x^2 + 4x + 2 = 0$

82. $2x^2 + 5x + 3 = 0$

83. $4x^2 = 1 - 2x$

Find the slope intercept form of the equation of the line that passes through the given point and has the indicated slope. Sketch the line by hand.

84. $(-3, 5)$ $m = -2$



Open-Ended. Be able to show all work.

85. Suppose a ball is thrown straight up from the ground with an initial velocity of 88 f/s . As the ball moves upward, gravity slows it. Eventually the ball begins to fall back to the ground. The height h of the ball after t seconds in the air is given by the quadratic function $h(t) = -16t^2 + 88t$.

a. How high does the ball go?

b. For how many seconds is the ball in the air before it hits the ground?

Honors Pre-Calculus Answer Section

COMPLETION

1. 3
2. -18
3. $-\frac{3}{4}$
4. 2
5. $\frac{1}{2}$
6. $\frac{29}{10}$
7. 2
8. 2
9. Does not exist
10. 0, 9
11. 0, 2
12. $-\frac{14}{139}$
13. ± 4
14. -3, 1
15. $0, \frac{4}{3}$

SHORT ANSWER

16. $(m+6)(m-4)$
17. $(a+2)(a+9)$
18. $5(n^2 + 2n + 4)$
19. $2(p+2)(p-1)$
20. $4(v-2)(v+1)$
21. $(5n+4)(n+3)$
22. $3(5n+1)(n-2)$
23. $(4x-7)(x-7)$
24. $(2n+3)(3n-2)$
25. $(2n+5)(2n-5)$
26. $(2x-1)^2$
27. $(a^2+3)(a^2-3)$
28. $3(1+b)^2$
29. $10(n+5)^2$

30. $10p(p+14)(p-14)$

31. $7x^2(7-x)(7+x)$

32. $-\frac{3}{2}, -\frac{3}{4}$

33. 8, 3

34. -6, 3

35. -1, 4

36. 5, 6

37. $\frac{1}{5}, \frac{3}{7}$

38. $-\frac{2}{7}, 0$

39. $-\frac{3}{5}, \frac{1}{3}$

40. 2, 6

41. $-\frac{2}{3}, \frac{3}{2}$

42. 4, 3

43. -2.5, 1

OTHER

44. 16

45. -16

46. $\frac{1}{16}$

47. $5\sqrt{2}$

48. $2^3\sqrt{3}$

49. $-2^3\sqrt{2}$

50. $6\sqrt{x}$

51. x^3y^2

52. 16

53. $-\frac{1}{16}$

54. $\frac{1}{16}$

55. 16

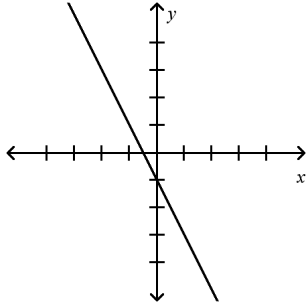
56. $\frac{4}{9}$

57. $\frac{2}{-3}$

58. $\frac{1}{x^3 y}$
59. $\frac{1}{x^2 y^2}$
60. $\frac{3y^4}{x^6}$
61. $\frac{16x^2}{9y^2}$
62. $\frac{x}{3}$
63. $\frac{x-4}{x+4}$
64. $6x\sqrt{x}$
65. $\frac{3x^2}{4y^3}$
66. $7\sqrt{2}$
67. $\sqrt{2}$
68. $x^3 + 4x^2 - 4x + 6$
69. $\frac{3}{5(x-2)}$
70. $\frac{6(x+1)}{x(2x-1)}$
71. $-x^3 + 4x^2 - 4x - 9$
72. $\frac{4x}{(x+2)(x-3)}$
73. $\frac{3}{x-2}$
74. $-2x^2 + x - 6$
75. $2x^3 - x^2 - x - 3$
76. $2x^2 + xy - 3y^2$
77. $x^2 - 8x + 16$
78. $x^2 - 9y^2$
79. $x^3 - 6x^2 + 12x - 8$
80. $15\sqrt[3]{3}$
81. $-2 \pm \sqrt{2}$
82. $-\frac{3}{2}, -1$

83. $-\frac{1}{4} \pm \frac{\sqrt{5}}{4}$

84. $y = -2x - 1$



85. a. 121 feet b. 5.5 seconds.