

Algebra II MIDTERM Review 2015 Answers

1. $f(0) = -1$

6. $f(d) = 2d - 1$

2. $f(12) = 23$

7. $f(g(3)) = 75$ $g(3) = -7$
 $f(-7) = -15$

3. $g(4) = -14$

8. $g(f(-1)) = -7$ $f(7) = -$
 $g(-3) = -7$

4. $f(-2) = -5$

5. $g(-2) = -2$

9. $f(g(x)) = 2(2 - x^2) - 1$
 $= 4 - 2x^2 - 1$
 $f(g(x)) = -2x^2 + 3$

10. Yes

11. No

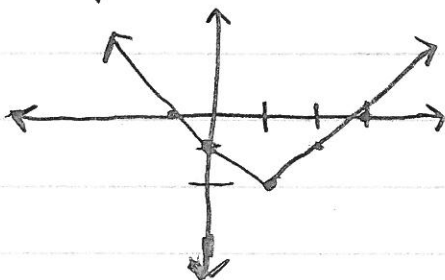
12. Yes

13. No fails VLT

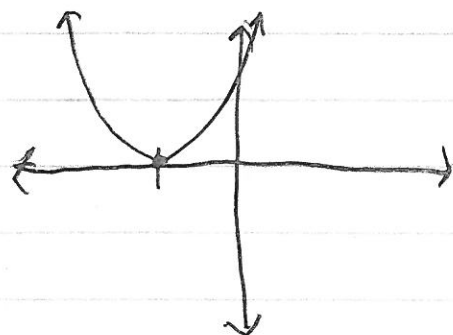
14. Linear $y = x - 3$

15. Quadratic $y = x^2 - 1$

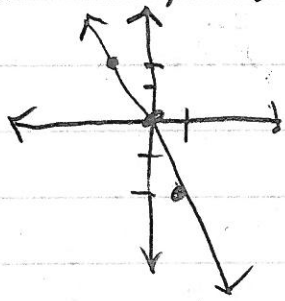
16. Absolute value;
Right 1, Down 2



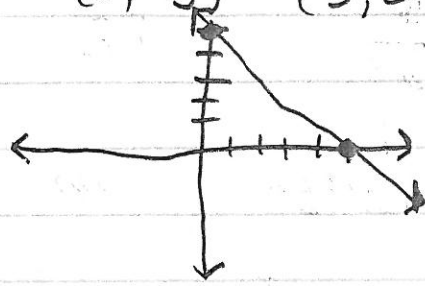
17. quadratic
left + 1



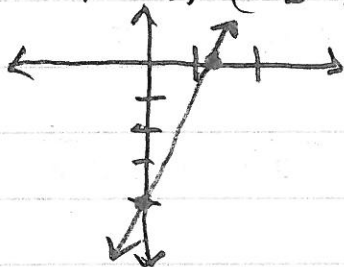
18. $(0,0)$ $(0,0)$



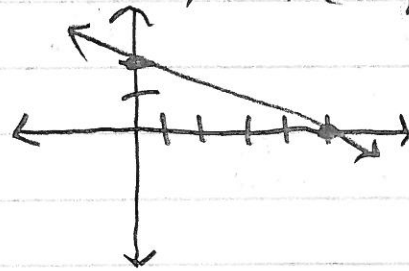
19) $(0,5)$ $(5,0)$



20. $(0,-4)$ $(\frac{4}{3},0)$



21. $(0,2)$ $(5,0)$



22-28 see next page

29. $(3,2)$

30. $(3,2)$

31. $(-\frac{1}{5}, \frac{19}{5})$

32. No Solution
(Parallel)

33. many solutions
(same line)

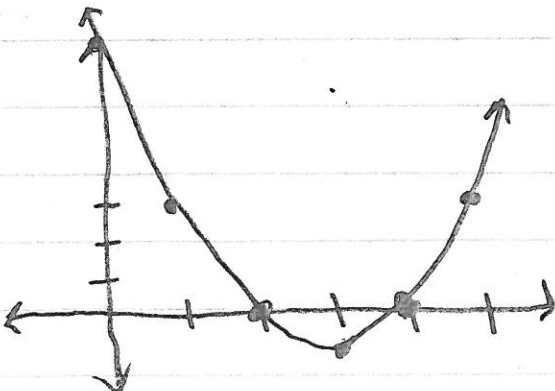
34. $(8,-4,2)$

35a) $(0,8)$ $x=3$ $(3,-1)$

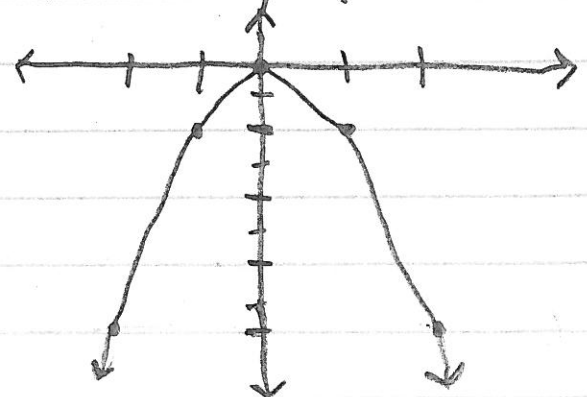
36a) $(0,0)$ $x=0$ $(0,0)$

b)

x	1	2	3	4	5
y	3	0	-1	0	3



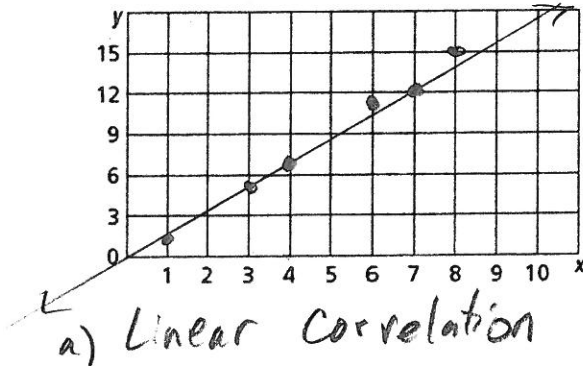
x	-2	-1	0	1	2
y	-8	-2	0	2	-8



22. For the following complete parts a – c. (No Calculator)

- Make a scatterplot and a line of fit, and describe the correlation.
- Use two ordered pairs to write a prediction equation. (Best fit line)
- Use your prediction equation to predict the missing value.

x	y
1	1
3	5
4	7
6	11
7	12
8	15
10	?



b) $(7, 12)$
 $(2, 3)$

$$\frac{12-3}{7-2} = \frac{9}{5}$$

$$y - 3 = \frac{9}{5}(x - 2)$$

$$y - 3 = \frac{9}{5}x - \frac{18}{5}$$

$$y = 1.8x - 0.6$$

$$y = \frac{9}{5}x - \frac{3}{5}$$

c) $y = 1.8(10) - 0.6$

$$y = 18 - 0.6$$

$$y = 17.4$$

Solve the inequality and graph the solution. (Calculator)

23. $3 + 3x < 12$

$$3x < 9$$

$$x < 3$$



24. $2 - 3y \geq 5$

$$-3y \geq 3$$

$$y \leq -1$$

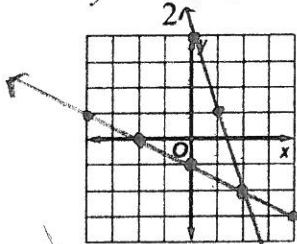


Solve each system of equations by graphing. (No Calculator)

25. $y = 4 - 3x$

$$y = -\frac{1}{2}x - 1$$

$$(2, -2)$$



26. $3x - 2y = 4$

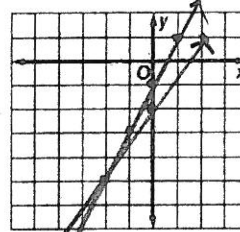
$$-2y = -3x + 4$$

$$y = \frac{3}{2}x - 2$$

$$2x - y = 1$$

$$-y = -2x + 1$$

$$y = 2x - 1$$



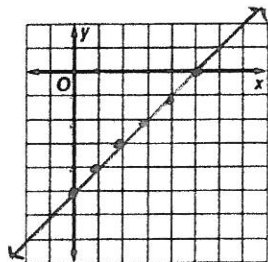
$$(-2, -5)$$

27. $y = x - 5$

$$-2x + 2y = -10$$

$$2y = 2x - 10$$

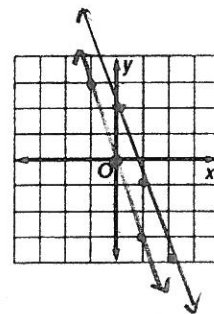
$$y = x - 5$$



same line
Many solutions

28. $y = -3x$

$$y = -3x + 2$$



Parallel

No solution

37. $(-2, -9)$ minimum

38. $(0, 0)$ maximum

39. $(-1, -1)$ minimum

40. $(3, -6)$ maximum

41. $(m+9)(m-2)$

42. $(4x+7)(x+1)$

43. $4p(2p+3)$

44. $(c+10)(c-10)$

45. $(x-3)(x^2+3x+9)$

46. $(x-7)(x+3)=0$
 $x=7$ or $x=-3$

47. $(x+3)(x+1)=0$
 $x=-3$ $x=-1$

48. $\sqrt{-36} = 6i$

49. $60i^2 = -60$

50. $(-2 - 16i)$

51. $(16 + 5i)$

52. $(23 - 14i)$

53. a. 0 b. 1 Real

54a) 4 b. 2 real

55a) -7 b. 2 Complex

56a) 120 b. 2 real

57. $x=6$ or $x=-5$

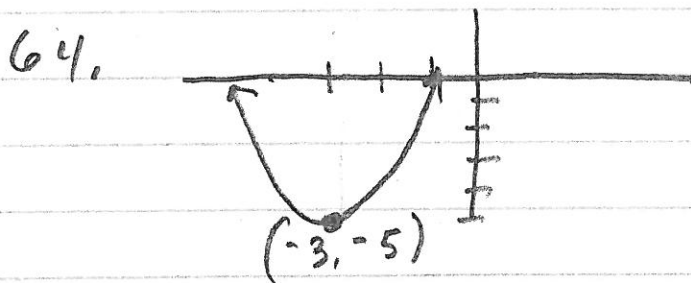
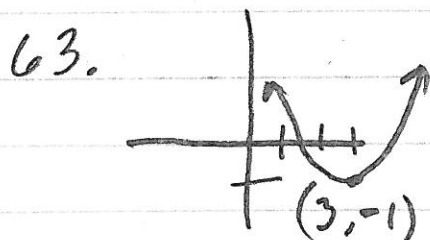
58. $\pm 2i\sqrt{3}$

59. $\frac{7 \pm \sqrt{17}}{4} \approx \begin{matrix} 2.78 \\ .72 \end{matrix}$

60. $1 \pm i$

61. $f(x) = (x-1)^2 - 6$
 $(1, -6)$; $x=1$; opens up

62. $g(x) = (x+3)^2 - 7$
 $(-3, -7)$; $x=-3$; up



65. $-6^4 + 56^2 + 26$

quartic trinomial

66. $y^5 - y^2 - 4y + 8$

5th degree polynomial

67. $3x^3 + 1/x^2$

cubic binomial

68.
$$\begin{array}{r|rrr} -1 & 1 & -3 & -4 \\ & \downarrow & -1 & 4 \\ \hline & 1 & -4 & 0 \end{array}$$

answer: $(t-4)$

69.
$$\begin{array}{r|rrrr} 2 & 1 & -3 & 0 & 4 \\ & \downarrow & 2 & -2 & -4 \\ \hline & 1 & -1 & -2 & 0 \end{array}$$

answer: $x^2 - x - 2$

70.
$$\begin{array}{r|rrrr} -3 & 3 & 7 & -4 & 3 \\ & \downarrow & -9 & 6 & -6 \\ \hline & 3 & -2 & 2 & -3 \end{array}$$

$3y^2 - 2y + 2 + \frac{-3}{y+3}$

71. $x^3 - 1/x^2 + 38x - 40$

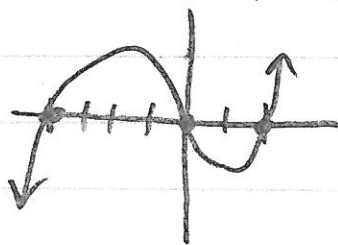
72. $x^3 + 6x^2 + 11x + 6$

73. 0 once; 2 three times; -5 two times

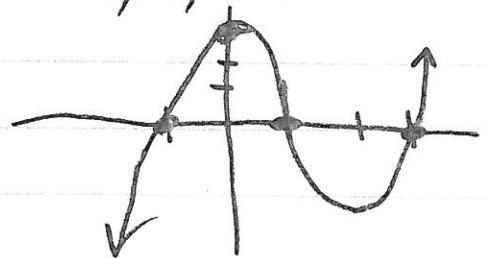
74. 1 six times; -2 four times

75. No Question 76. 1, -2, -5 77. No ^{Real} solution

78. 0, 2, -4



79. -1, 1, 3



80. $y = |x - 2| - 3$

81. $y = -(x + 5)^2$

82. Absolute value; left 3 down 1; $f(x) = |x + 3| - 1$

83. Quadratic; $f(x) = -x^2 + 3$; up 3 reflected

84. $5m^5n^3\sqrt{2n}$

85. $2x^2y^3\sqrt[4]{2y}$

86. $3ab\sqrt[3]{a^2b}$

87. $2x^3\sqrt{2}$

88. $2x$

89. $\frac{2n^3\sqrt{2m}}{m}$

90. $11\sqrt[3]{xy}$

91. $11\sqrt{3}$

92. $18\sqrt[3]{3}$

93. $x^{\frac{5}{6}}$ or $\sqrt[6]{x^5}$

94. $3y\sqrt{y}$

95. $5^{\frac{3}{4}}$ or $\sqrt[4]{125}$

96. $\frac{9^{14}}{4p^{10}}$

97. $81m^2n^4$

98. $\frac{y}{x^3}$

99. $\frac{1}{4a^{18}b^6}$

100. $\frac{2}{5}$

101. $\frac{3}{4}$

102. $64^{\frac{1}{3}} = 4$

103. $225^{\frac{1}{2}} = 15$

104. $\frac{1}{4}$

105. 9

106. 3

107. 4

108. $7 - 3\sqrt{5}$

109. $-59 + 9\sqrt{7}$

110. $\sqrt[3]{x^2}$

111. $\sqrt{27m^3}$

112. $p^{\frac{5}{4}}$

113. $s^{\frac{11}{2}}$

114. $x = 7$

115. $x = -3$

116. $x = -6$ extraneous

117. a. 625 bulldozers

b. \$ 781,250

vertex (625, 781,250)

118. a. 1000 chips
vertex

b. \$ 20

(1000, 20)