

Pre-Calculus Honors

Summer Assignment Answers

1) $y = 4x - 15$

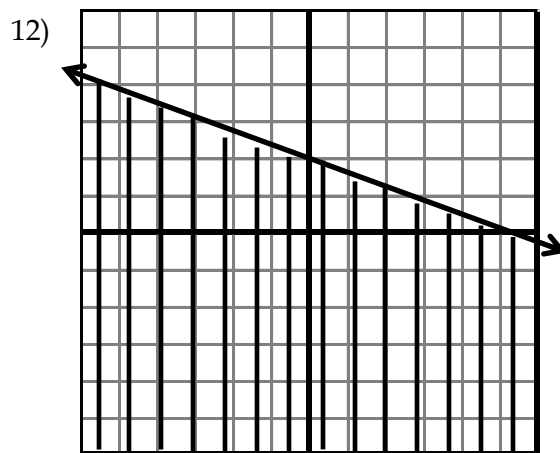
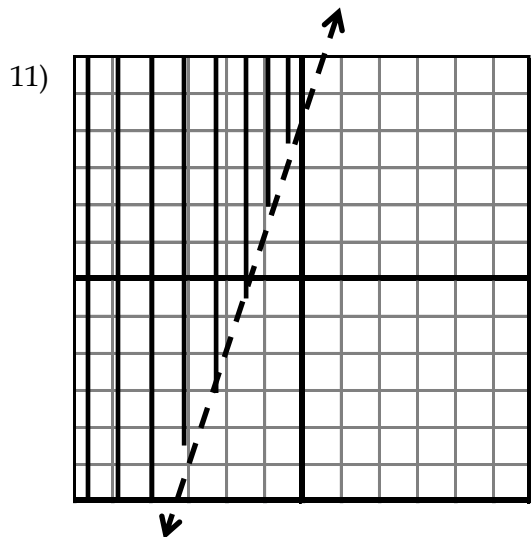
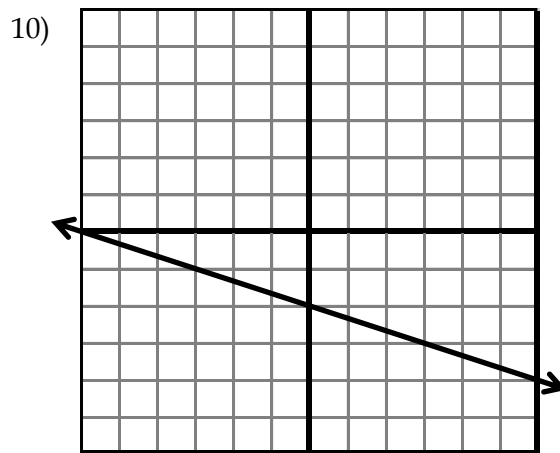
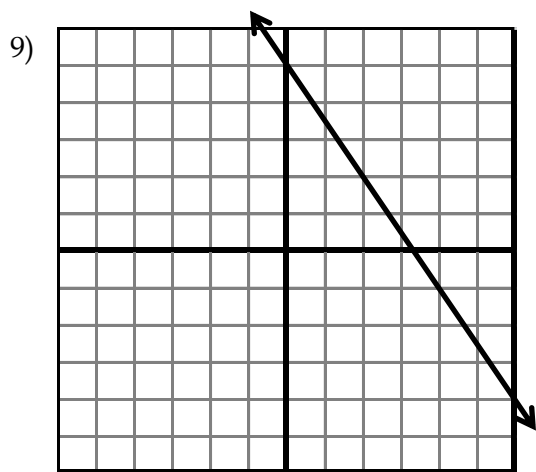
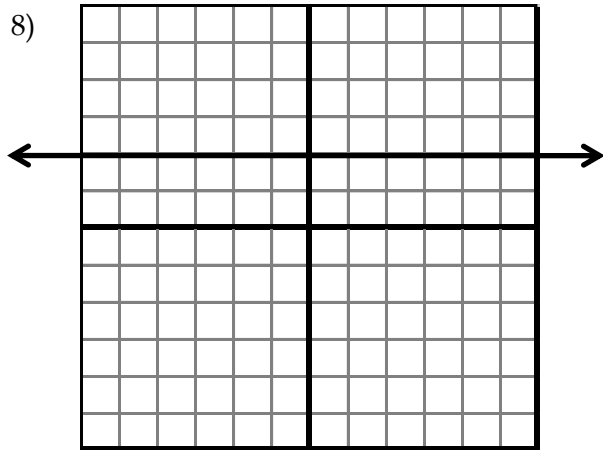
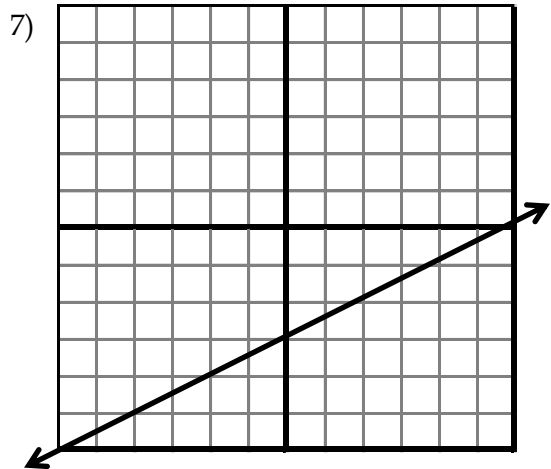
2) $y = 3x - 19$

3) $y = \frac{4}{3}x + 2$

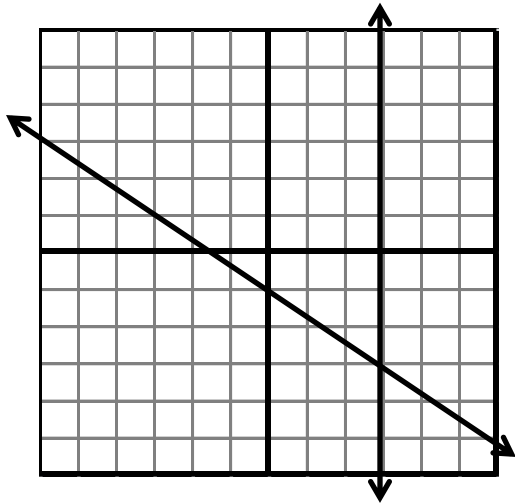
4) $y = \frac{1}{2}x$

5) the x-intercept is -4 , the y-intercept is $\frac{8}{3}$

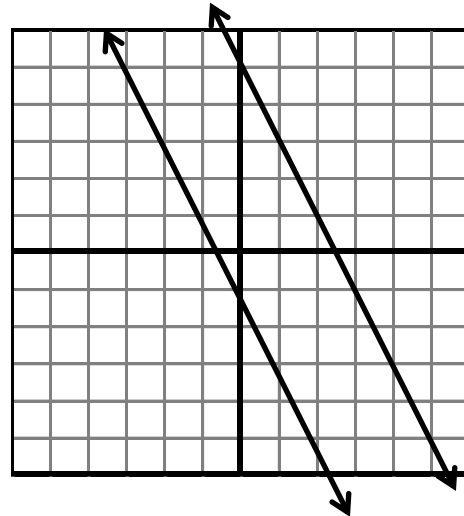
6) the x-intercept is $\frac{5}{2}$, the y-intercept is -10



13) Consistent and Independent
Solution: $(3, -3)$



14) Inconsistent
Solution: No Solution

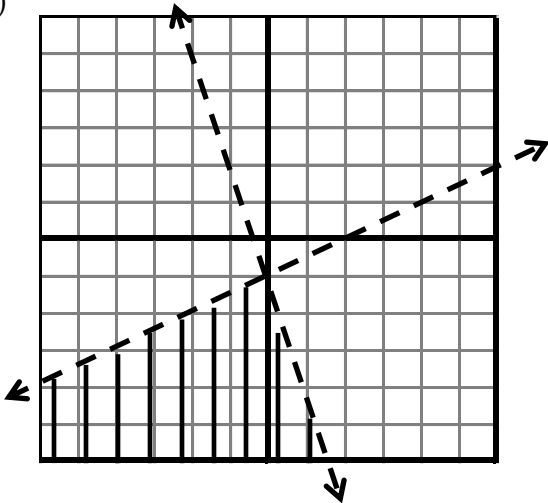


15) $(3, -1)$

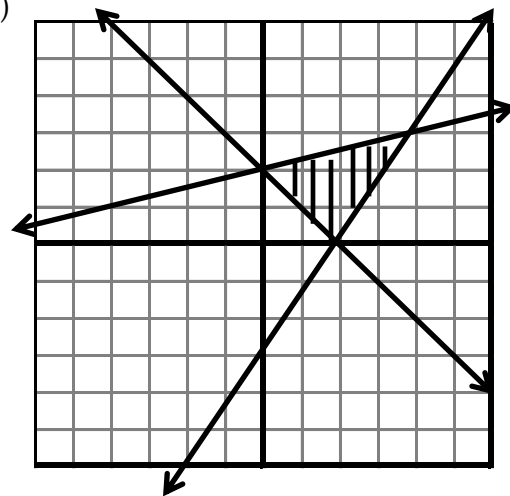
16) $(8, 5)$

17) Infinitely Many Solutions

18)



19)



20) $-32x^{15}y^{10}$

21) $\frac{-14x^2}{y^3}$

22) $\frac{b^8}{9a^6}$

23) $-\frac{5c^3}{6d^4}$

24) $6m^2 - 7m - 20$

25) $4x^2 + 20xy + 25y^2$

26) $8x^3 + 125$

27) $10c^3 - 29c^2 + 36c$

28) $2a^2 + b - 3$

29) $27x^3 - 54x^2 + 36x - 8$

30) $-6x^4|y|$

31) $3b^6c^3\sqrt[3]{c^2}$

32) $3|(x+4)|$

33) $5\sqrt{3}$

34) $4\sqrt{2}$

35) $2\sqrt[3]{5}$

36) $2|c^3|d^2\sqrt{3d}$

37) $2x^2|y|$

38) $-5\sqrt{3} + 6\sqrt{2}$

39) $23\sqrt{2}$

40) $2x^2$

41) 40

42) $\frac{2\sqrt{3}}{3}$

43) $3\sqrt{5}$

44) $\frac{\sqrt{5}+1}{2}$

45) $\frac{20-7\sqrt{3}}{11}$

46) 7

47) $\frac{1}{5}$

48) 9

49) 32

50) 53

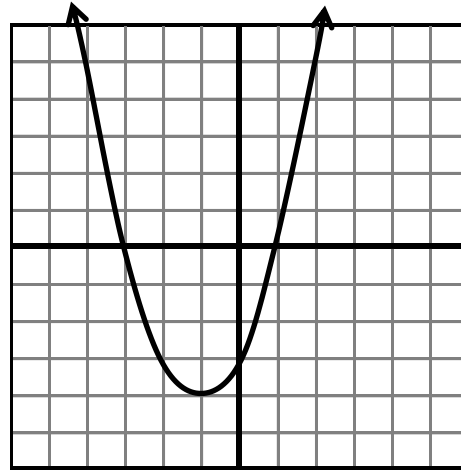
51) $a^2 - 8a + 19$

52) 103

53) $3x^2 + 2$

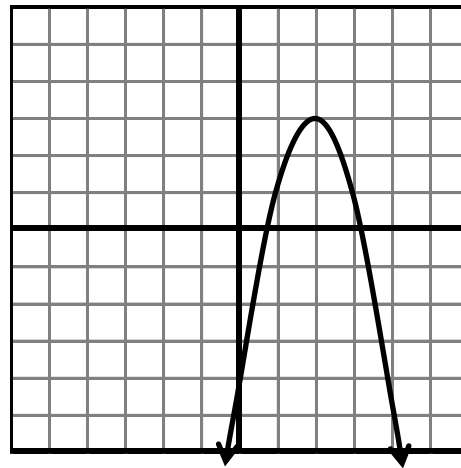
54) $f(x) = x^2 + 2x - 3$

opens up or down?	up
y-intercept	-3
Axis of Symmetry	$x = -1$
Vertex	$(-1, -4)$
Domain	all real numbers
Range	$y \geq -4$



55) $f(x) = -2x^2 + 8x - 5$

opens up or down?	down
y-intercept	-5
Axis of Symmetry	$x = 2$
Vertex	$(2, 3)$
Domain	all real numbers
Range	$y \leq 3$



56) 3.75 seconds

57) 225 feet

58) $4ab(2b-1)$

59) $(x+7)(x-3)$

60) $(5x+y)^2$

61) $(3c+7d)(3c-7d)$

62) $3x(x-6)(x+5)$

63) $(3x+4)(x+8)$

64) $(x+5)(x^2-2)$

65) $(3x-1)(2x+3)$

66) $xy(4x^2+9)(2x+3)(2x-3)$

67) $(x^2+5)(x+3)(x-3)$

68) $(2x+5)(4x^2-10x+25)$

69) $(9a-2b)(2a-3b)$

70) -1

71) $8i$

72) $2i\sqrt{6}$

73) $-7 + 4i$

74) $21 + 20i$

75) $-\frac{4}{13} + \frac{7}{13}i$

76) $x = -\frac{1}{5}$ or $x = \frac{3}{4}$

77) $x = 0$ or $x = 3$

78) $x = \pm 2i$ or $x = \pm 1$

79) $x = -5 \pm 4i$

80) $x = -4 \pm 2\sqrt{3}$

81) $x = \frac{-3 \pm \sqrt{15}}{2}$

82) $x = 3 \pm 2i$

83) $x = -8$ or $x = 6$

84) $x = 2 \pm i\sqrt{3}$

85) 35 years old

86) $\frac{2k+5}{k-10}$

87) $-\frac{5ux^2}{21yz^5}$

88) $\frac{1}{x+7}$

89) $\frac{20a-21b}{24a^2b}$

90) $\frac{7x+41}{(x+3)(x+7)}$

91) $\frac{x-11}{3(x+2)(x-2)}$

92) y

93) H

94) E

95) D

96) A

97) C

98) G

99) F

100) B

101) $A \cup B = \{2, 5, 6, 7, 8, 15\};$
 $C \cap D = \{15, 21\};$
 $(A \cup C) \cup D = \{2, 3, 5, 7, 11, 15, 21, 26\}$

108) $\begin{bmatrix} 12 & -28 & 20 \\ -12 & -28 & -36 \end{bmatrix}$

102) $-\frac{81}{29} - \frac{33}{29}i\sqrt{5}$

109) $A + B = \begin{bmatrix} 18 & 7 & 13 \\ 14 & 16 & 16 \end{bmatrix};$

103) $E = 281.34 + 35.2i$ volts

$5A - B = \begin{bmatrix} 24 & 23 & 11 \\ -2 & 32 & 56 \end{bmatrix}$

104) $N = \{5, 7, 9, 11\}$

110) $x = 7, y = -1, z = -7$

105) $x^{\frac{6}{7}}$

111) $(6, 8]$

106) $\begin{bmatrix} 5 & 7 \\ -1 & -3 \end{bmatrix}$

112) $\{x \mid x \geq 4, x \in \mathbb{R}\}$

113) $\{x \mid 9 \leq x, x \in \mathbb{W}\}$

107) $\begin{bmatrix} 4 & 8 \\ -6 & -8 \end{bmatrix}$

114) $\{x \mid x \neq \pm 7, x \neq 0\}$

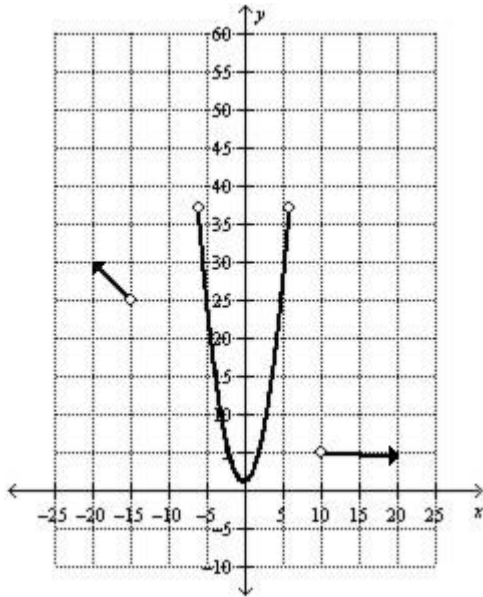
- 115) Domain: all real numbers;
Range: $\{y \mid -1 \leq y \leq 1\}$;
Yes, for any value of x there is only one value of y .

116) $f(m-2) = 2m^2 - 6m + 10$

- 117) D: $\{x \mid x \in \mathbb{R}\}$
R: $\{y \mid y \in \mathbb{Z}\}$
y-intercept: $(0, 0)$
x-intercepts: $\{x \mid x \in \mathbb{R}\}$
no symmetry
neither odd nor even
jump discontinuity for $\{x \mid x \in \mathbb{Z}\}$
as $x \rightarrow -\infty$, $f(x) \rightarrow -\infty$; as $x \rightarrow \infty$, $f(x) \rightarrow \infty$
constant: $\{x \mid x \notin \mathbb{Z}\}$
increasing: $\{x \mid x \in \mathbb{Z}\}$

118) $y = 2 + \sqrt{x-3}$

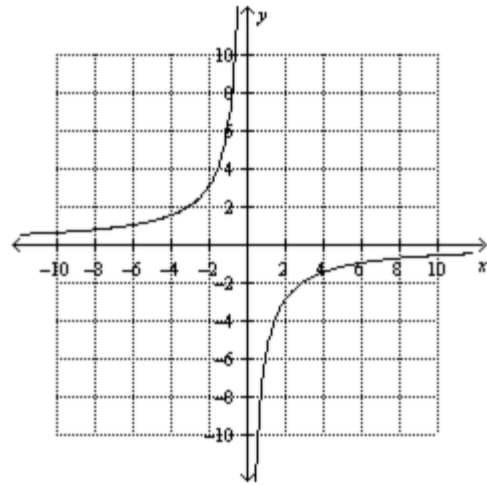
119)



120) D: $x > 2$; $(f \circ g)(x) = \frac{2}{\sqrt{x-2}}$

121) $f(x) = x^2 - 3$
 $g(x) = x - 2$

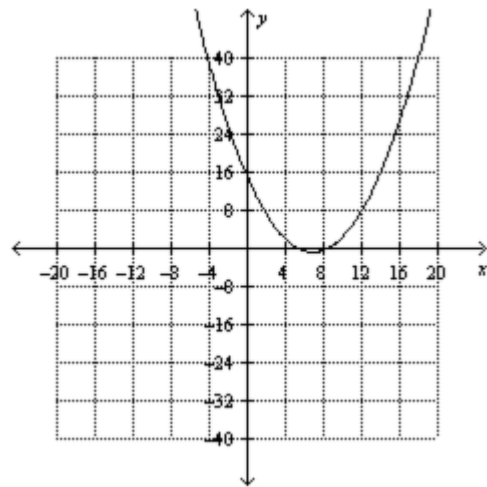
122)



yes

123) $f^{-1}(x) = \frac{7x+1}{1-x}$

124)



125) As $x \rightarrow -\infty$, $f(x) \rightarrow +\infty$
As $x \rightarrow +\infty$, $f(x) \rightarrow -\infty$

126) 4 possible real zeros and 3 turning points; ± 3 , ± 2

127) $-3x^5 + 2x^4 + 5x^3 + x^2 + 2x - 2 + \frac{2}{-2x-5}$

128) $-2x^2 + 3x - 1 + \frac{4}{-2x^3 - 6x^2 - 4x + 6}$

129) $(x+3)$, yes;
 $(x-1)$, yes;
 $(x+3)$, $(x-1)$, $(x^3 - x + 14)$

130) $x^3 + 4x^2 - 16x - 64 = 0$

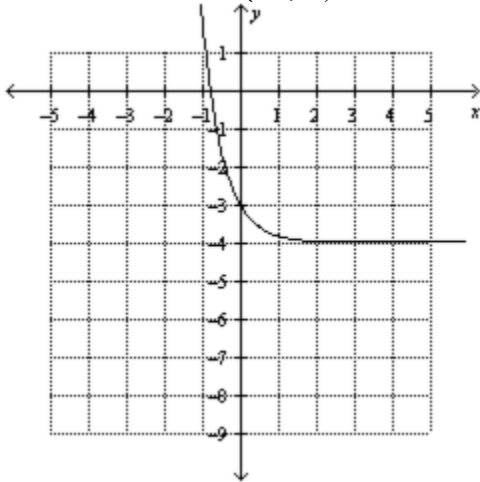
131) $\frac{4}{5} + \frac{3}{5}i, \frac{4}{5} - \frac{3}{5}i, 3$

132) $x^4 + 24x^3 + 243x^2 + 1102x + 1530$

133. $g(x)$ is the graph of $f(x)$ translated 2 unit(s) to the right and 4 unit(s) up.

134) $g(x)$ is the graph of $f(x)$ translated 4 unit(s) to the right, 2 unit(s) up, and expanded vertically by a factor of 5.

135) $D = (-\infty, \infty)$
 $R = (-4, \infty)$
 intercept: $(0, -3)$
 asymptote: $y = -4$
 as $x \rightarrow -\infty, f(x) \rightarrow \infty$; as $x \rightarrow \infty, f(x) \rightarrow -4$
 decreasing for $(-\infty, \infty)$



136) $30.9^\circ \text{C}; 32.9^\circ \text{C}$

137) 11.87 years