Applied Algebra 2 Name_____ ID: 1

Exam Review 2015

Date_____ Period____

Solve each equation.

1) $\left|\frac{a}{6}\right| = 3$

2) $\left|\frac{v}{9}\right| = 1$

3) $|x + 2| = 7$

4) $|-10x| = 70$

Determine if the sequence is arithmetic. If it is, find the common difference, the 52nd term, and the explicit formula.

5) 2, 4, 12, 48, ...

6) 4, 7, 12, 19, ...

7) 30, 39, 48, 57, ...

8) 13, 17, 21, 25, ...

Given the first term and the common difference of an arithmetic sequence find the 52nd term and the explicit formula.

9) $a_1 = -35,\ d = -4$

10) $a_1 = 32,\ d = -3$

11) $a_1 = -18,\ d = -2$

12) $a_1 = -10,\ d = -10$

Evaluate each arithmetic series described.

13) $\sum_{m=1}^{45} (4m + 5)$

14) $\sum_{m=1}^{45} (2m - 2)$

15) $\sum_{m=1}^{13} (3m - 9)$

16) $\sum_{k=1}^{5} (8 - 10k)$

17) $a_1 = 20,\ a_n = 137,\ n = 40$

18) $a_1 = 2,\ a_n = 20,\ n = 10$

19) $a_1 = -20,\ a_n = -115,\ n = 20$

20) $a_1 = -11,\ a_n = -51,\ n = 6$

Simplify each expression.

21) $-9(-10 + 8n) + 2n$

22) $8(n + 9) + 2n$

23) $-6p + 10(1 + 8p)$

24) $-7x + 3(3x - 7)$

Solve each equation.

25) $4^{-3v} = \frac{1}{64}$

26) $\left(\frac{1}{36}\right)^{3a+1} = 216^{3a}$

Solve each equation. Round your answers to the nearest ten-thousandth.

27) $9^{a-4.9} = 19$

28) $20^{-4m} = 36$

Solve each equation.

29) $\log_{15}(3n + 3) = \log_{15}(n + 5)$

30) $\log_{14}(5x - 4) = \log_{14}(5 - 4x)$

31) $\log x + \log(x + 3) = 1$

32) $\log_2(x^2 - 9) - \log_2 7 = 4$

33) $-4(x - 2) = 29 - x$

34) $-9 - 2x = -(x + 6)$

35) $3a - 4(7 + 5a) = -a + 4$

36) $35 + 3n = 8(7 + 3n)$

Solve each equation with the quadratic formula.

37) $3a^2 + 4a = 4$

38) $2v^2 + 9v = 26$

39) $3x^2 - 57 = 10x$

40) $4n^2 = 25$

41) $2m^2 = 14 - 12m$

42) $2x^2 + x = 6$

Simplify. Your answer should contain only positive exponents.

43) $x^3y^{-4} \cdot 3y^4$

44) $4u^2v^{-2} \cdot 3u^4v^{-3}$

45) $(3yx^{-4})^3$

46) $(m^{-3}n^2)^2$

47) $\dfrac{3y^3}{3x^2}$

48) $\dfrac{4yx^4}{4x^3y^{-4}}$

Factor each completely.

49) $2n^3 - n^2 - 10n + 5$

50) $5x^3 + 20x^2 + 2x + 8$

Evaluate each function.

51) $g(n) = -3n^3 + 2$; Find $g(-1)$

52) $g(n) = -2n^2 - 3$; Find $g(4)$

53) $f(n) = 2n + 2$; Find $f(5)$

54) $k(x) = x^3 - 2x$; Find $k(-4)$

55) $f(t) = 4t - 2$; Find $f(4 + t)$

56) $f(x) = x - 2$; Find $f(x^2)$

57) $h(x) = x^2 + x$; Find $h(-4a)$

58) $p(t) = -2t - 3$; Find $p\left(\dfrac{t}{4}\right)$

Perform the indicated operation.

59) $h(x) = x^2 + 3x$
$g(x) = 4x$
Find $h(x) - g(x)$

60) $h(t) = 4t$
$g(t) = 4t - 5$
Find $h(t) \cdot g(t)$

61) $g(a) = 4a + 5$
$f(a) = 2a - 4$
Find $g(a) \cdot f(a)$

62) $f(t) = t - 2$
$g(t) = t^2 - 1$
Find $f(t) \cdot g(t)$

Determine if the sequence is geometric. If it is, find the common ratio, the 8th term, and the explicit formula.

63) 81, 811, 8111, 81111, ...

64) 3, −12, 48, −192, ...

Given the first term and the common ratio of a geometric sequence find the 8th term and the explicit formula.

65) $a_1 = 3,\ r = -2$

66) $a_1 = -2,\ r = -2$

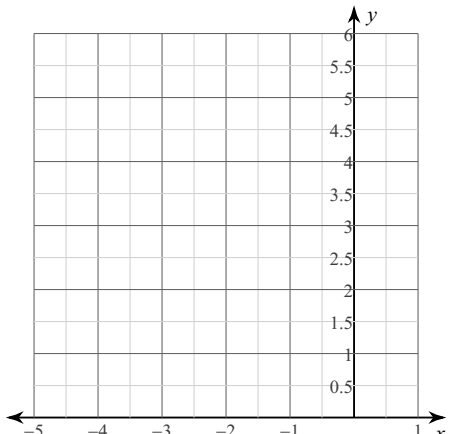
Evaluate each geometric series described.

67) $2 + 12 + 72 + 432...,\ n = 6$

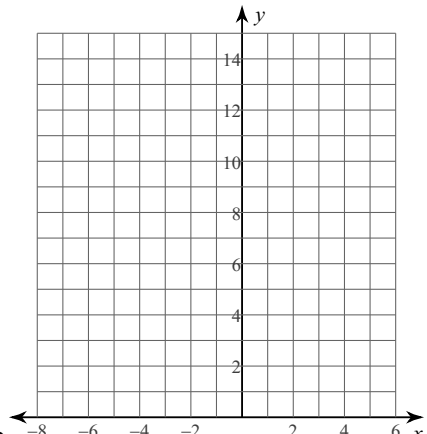
68) $-4 - 24 - 144 - 864...,\ n = 7$

Sketch the graph of each function. Find the vertex, x-intercepts, and y-intercept.

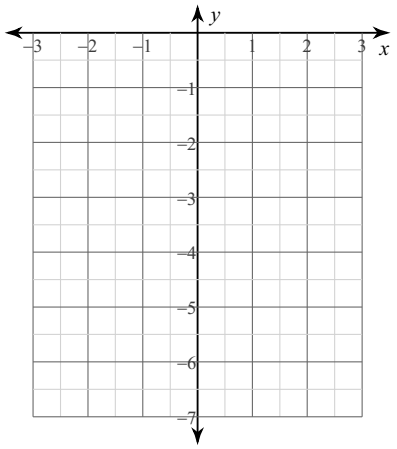
69) $y = x^2 + 6x + 10$



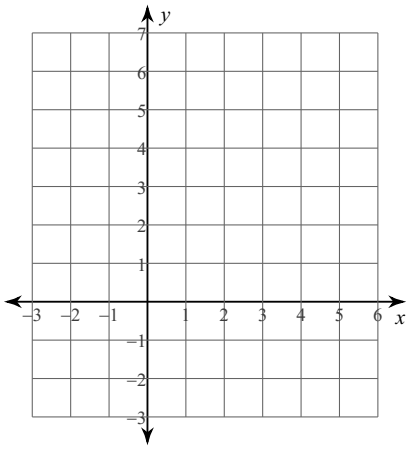
70) $y = 3x^2 - 12x + 14$



71) $y = -x^2 + 2x - 3$



72) $y = 2x^2 - 16x + 30$



Solve each system by graphing.

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

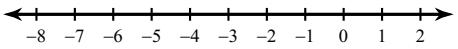
$y = -\frac{7}{2}x - 4$

74) $x + 4y = -12$

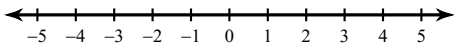
$5x + 4y = 4$

Solve each inequality and graph its solution.

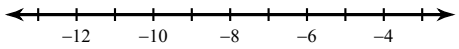
75) $-30 + 5x \le 2(8x + 4) + 8x$



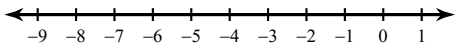
76) $4(b + 1) < 4 + 3b$



77) $-3(6 + 5v) \ge 31 - 8v$



78) $7a - 3(a + 6) \le 8a + 6$



Write the slope-intercept form of the equation of each line given the slope and y-intercept.

79) Slope $= -\frac{3}{5}$, y-intercept = 3

80) Slope $= \frac{2}{3}$, y-intercept = –3

Write the slope-intercept form of the equation of the line through the given points.

81) through: $(-1, -3)$ and $(4, 3)$

82) through: $(-5, -4)$ and $(0, -2)$

Expand each logarithm.

83) $\log \sqrt{x}$

84) $\log x^6$

85) $\log \sqrt[3]{x}$

86) $\log x^4$

Condense each expression to a single logarithm.

87) $\frac{\log u}{2}$

88) $4 \log x$

89) $\log a - \log b$

90) $3 \log u$

Rewrite each equation in exponential form.

91) $\log_{15} 1 = 0$

92) $\log_{18} 324 = 2$

Rewrite each equation in logarithmic form.

93) $6^0 = 1$

94) $19^2 = 361$

Evaluate each series.

95) $\sum_{k=1}^{5}(k+200)$

96) $\sum_{m=1}^{5}\frac{m^2+1}{m}$

97) $\sum_{n=1}^{6}(20-n)$

98) $\sum_{n=1}^{6}(30-n)$

Solve each system by elimination.

99) $-4x+6y=-12$
$8x-10y=28$

100) $2x+4y=4$
$10x+5y=-10$

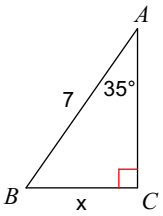
Solve each system by substitution.

101) $x-8y=1$
$-6x+2y=-6$

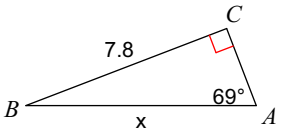
102) $8x+y=-3$
$-4x-2y=6$

Find the measure of each side indicated. Round to the nearest tenth.

103)



104)



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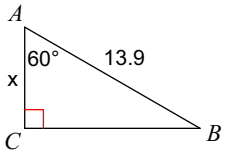

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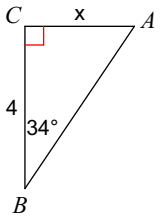
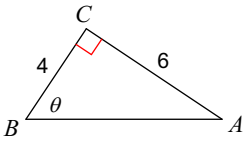


Find the measure of each angle indicated. Round to the nearest tenth.

107)



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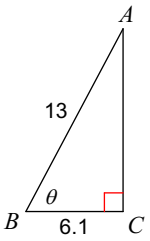

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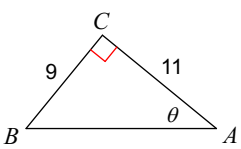
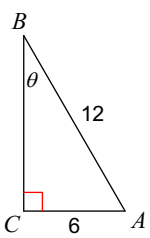
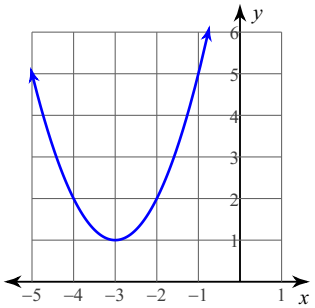


110)



Answers to Exam Review 2015 (ID: 1)

1) $\{18, -18\}$
2) $\{9, -9\}$
3) $\{5, -9\}$
4) $\{-7, 7\}$
5) Not arithmetic
6) Not arithmetic
7) Common Difference: $d = 9$
$a_{52} = 489$
Explicit: $a_n = 21 + 9n$
8) Common Difference: $d = 4$
$a_{52} = 217$
Explicit: $a_n = 9 + 4n$
9) $a_{52} = -239$
Explicit: $a_n = -31 - 4n$
10) $a_{52} = -121$
Explicit: $a_n = 35 - 3n$
11) $a_{52} = -120$
Explicit: $a_n = -16 - 2n$
12) $a_{52} = -520$
Explicit: $a_n = -10n$
13) 4365
14) 1980
15) 156
16) −110
17) 3140
18) 110
19) −1350
20) −186
21) $90 - 70n$
22) $10n + 72$
23) $74p + 10$
24) $2x - 21$
25) $\{1\}$
26) $\left\{-\frac{2}{15}\right\}$
27) 6.2401
28) −0.2991
29) $\{1\}$
30) $\{1\}$
31) $\{2\}$
32) $\{11, -11\}$
33) $\{-7\}$
34) $\{-3\}$
35) $\{-2\}$
36) $\{-1\}$
37) $\left\{\frac{2}{3}, -2\right\}$
38) $\left\{2, -\frac{13}{2}\right\}$
39) $\left\{\frac{19}{3}, -3\right\}$
40) $\left\{\frac{5}{2}, -\frac{5}{2}\right\}$
41) $\{1, -7\}$
42) $\left\{\frac{3}{2}, -2\right\}$
43) $3x^3$
44) $\frac{12u^6}{v^5}$
45) $\frac{27y^3}{x^{12}}$
46) $\frac{n^4}{m^6}$
47) $\frac{y^3}{x^2}$
48) y^5x
49) $(n^2 - 5)(2n - 1)$
50) $(5x^2 + 2)(x + 4)$
51) 5
52) −35
53) 12
54) −56
55) $14 + 4t$
56) $x^2 - 2$
57) $16a^2 - 4a$
58) $-3 - \frac{1}{2}t$
59) $x^2 - x$
60) $16t^2 - 20t$
61) $8a^2 - 6a - 20$
62) $t^3 - 2t^2 - t + 2$
63) Not geometric
64) Common Ratio: $r = -4$
$a_8 = -49152$
Explicit: $a_n = 3 \cdot (-4)^{n-1}$
65) $a_8 = -384$
Explicit: $a_n = 3 \cdot (-2)^{n-1}$
66) $a_8 = 256$
Explicit: $a_n = -2 \cdot (-2)^{n-1}$
67) 18662
68) −223948
69)



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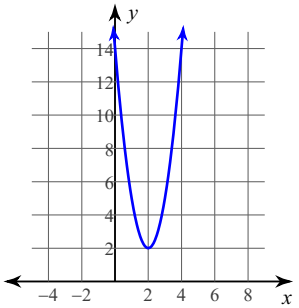
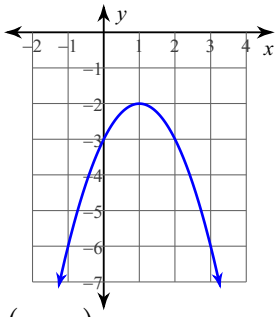
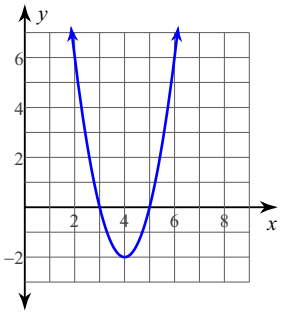
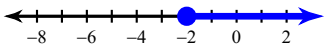


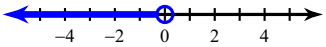
71) 

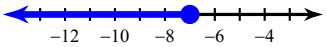
72) 

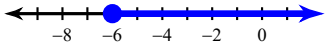
73) $(-2, 3)$

74) $(4, -4)$

75) $x \geq -2$: 

76) $b < 0$: 

77) $v \leq -7$: 

78) $a \geq -6$: 

79) $y = -\frac{3}{5}x + 3$

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

81) $y = \frac{6}{5}x - \frac{9}{5}$

82) $y = \frac{2}{5}x - 2$

83) $\frac{\log x}{2}$

84) $6 \log x$

85) $\frac{\log x}{3}$

86) $4 \log x$

87) $\log \sqrt{u}$

88) $\log x^4$

89) $\log \frac{a}{b}$

90) $\log u^3$

91) $15^0 = 1$

92) $18^2 = 324$

93) $\log_6 1 = 0$

94) $\log_{19} 361 = 2$

95) 1015

96) $\frac{1037}{60}$

97) 99

98) 159

99) $(6, 2)$

100) $(-2, 2)$

101) $(1, 0)$

102) $(0, -3)$

103) 4

104) 8.4

105) 7

106) 2.7

107) 56.3°

108) 62°

109) 39.3°

110) 30°