Algebra II

Exam Review College Prep

Name Key Date _____

Try to answer all questions without using Mult.choices avaiable. Show all work.

1. Finish the statement: "If a is a negative number, then $\sqrt{a}$ is _____."

   a) a whole number b) rational

   c) irrational (d) not a real number — imaginary

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2. Find the value of $11\sqrt{27} - 6\sqrt{27}$. $= 5\sqrt{27}$

   a) 5 (b) $15\sqrt{3}$ c) $45\sqrt{3}$ d) $17\sqrt{37}$

   ~~$11\sqrt{9\cdot 3} - 6\sqrt{9\cdot 3}$~~

   $5 \cdot 3\sqrt{3} = 15\sqrt{3}$

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3. What statement represents the Commutative Property of Addition?

   a) $7(a+b) = 7a + 7b$ Distributive

   (b) $y + 2z = 2z + y$

   c) $(11 + x) + 8 = 11 + (x + 8)$ Associative

   d) $a + 0 = a$ Additive Identity

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4. What property justifies the statement $17 + (-17) = 0$?

   a) Additive Property of Equality $b = c$, $b+5 = c+5$

   (b) Additive Inverse Property

   c) Multiplicative Identity Property $x \cdot 1 = x$

   d) Additive Identity Property $a+0 = a$

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5. What property justifies the statement, "If $x(x+4) = 0$, then $x = 0$ or $x + 4 = 0$"?

   a) Additive Property of Equality

   (b) Zero Product Property

   c) Multiplicative Property of Zero

   d) Additive Inverse Property

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6. Which expression demonstrates the Distributive Property?

   a) $a(bc) = ab + bc$

   (b) $4 \cdot (3 + \sqrt{7}) = 4 \cdot 3 + 4 \cdot \sqrt{7}$

   c) $3x \cdot 4y + 4 = (3x \cdot 4y) + 4$

   d) $4a^2 - b^2 = (2a - b)(2a + b)$ → Factoring (Reverse of distributing)

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7. Simplify the expression $(a^2 + 2a - 6) - (3a^2 + 4a - 1)$.

   a) $-2a^2 + 6a - 7$ b) $4a^2 + 6a - 5$

   (c) $-2a^2 - 2a - 5$ d) $-2a^2 + 6a - 5$

$a^2 + 2a - 6 - 3a^2 - 4a + 1$

$= -2a^2 - 2a - 5$

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8. Find the expression equivalent to $(11r^{11}t^3)^2$.

   a) $22r^{13}t^5$ b) $22r^{22}t^6$

   c) $121r^{13}t^5$ (d) $121r^{22}t^6$

$11^2 \cdot r^{11\cdot 2} \cdot t^{3\cdot 2}$

$121\, r^{22}\, t^6$

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9. Simplify the expression $\dfrac{14x^2y^2z^2}{21xy^8z^4}$.

   a) $\dfrac{x^2}{7y^4z^2}$ b) $\dfrac{x}{7y^6z^2}$ (c) $\dfrac{2x}{3y^6z^2}$ d) $7xy^6z^2$

$\frac{14}{21}\, x^{2-1}\, y^{2-8}\, z^{2-4}$

$\frac{2}{3}\, x\, y^{-6}\, z^{-2} = \frac{2x}{3y^6z^2}$

10. Simplify: 3^{-3}

a) -27 (b) $\frac{1}{27}$ c) 54 d) 27

$\frac{1}{3^3} = \frac{1}{27}$

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11. Write the expression $\frac{x^{-6}}{x^9}$ without a negative exponent.

a) $-\frac{1}{x^{15}}$ b) $-\frac{1}{x^3}$ (c) $\frac{1}{x^{15}}$ d) x^{15}

$\frac{1}{x^6 \cdot x^9} = \frac{1}{x^{6+9}} = \frac{1}{x^{15}}$

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12. Which expression is equivalent to $-7t^3(2t^2-3)$?

(a) $-14t^5+21t^3$ b) $35t^5$

c) $9t^5+10t^3$ d) $14t^5+21t^3$

$-14t^{3+2} + 21t^3$

$-14t^5 + 21t^3$

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13. Simplify the expression $(3x+2)(x^2-5x-6)$.

a) x^2-2x-4

(b) $3x^3-13x^2-28x-12$

c) $3x^3-15x^2-18x-12$

d) $x^3-10x^2-10x-12$

$3x^3 - 15x^2 - 18x$

$+ 2x^2 - 10x - 12$

$3x^3 - 13x^2 - 28x - 12$

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14. Simplify: $\frac{30x-45}{5}$

a) $6x-45$ b) $30x-9$

(c) $6x-9$ d) $25x-40$

$\frac{30x}{5} - \frac{45}{5} = 6x-9$

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15. Find the expression that is equivalent to $(x-7)^2$.

a) $2x-14$ b) $2x+49$

c) x^2+49 (d) $x^2-14x+49$

$(x-7)(x-7) = x^2 - 7x - 7x + 49$

$= x^2 - 14x + 49$

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16. Factor the polynomial $ab+2a+5b+10$ completely.

$a(b+2) + 5(b+2) = (a+5)(b+2)$

(a) $(a+5)(b+2)$ b) $a(2+b)+5(b+2)$

c) $(a-2b)(5a+b)$ d) $(a+2)(b+5)$

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17. Factor the polynomial $21c^2+19c-12$ completely.

a) $(7c+3)(3c+4)$ (b) $(7c-3)(3c+4)$

c) $(7c-6)(3c+2)$ d) prime polynomial

$(7c-3)(3c+4)$

Factors of 12: 12·1, 6·2, 3·4

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18. Factor $w^2-13w-30$ completely.

a) $(w-3)(w-10)$ (b) $(w+2)(w-15)$

c) $(w+3)(w-10)$ d) $(w-2)(w-15)$

mult to get -30

add/subtract to get -13 → $10+3$, $15+2$

$(w-15)(w+2)$

---

19. Factor completely: $9g^2-6gh+h^2$

(a) $(3g-h)^2$ b) $(3g-h)(g+h)$

c) prime d) $(9g-h)(g+h)$

$(3g-h)(3g-h)$

20. Factor $z^2 - 169$ completely.

a) $(z-16)(z-9)$ b) $(z-13)(z-13)$
c) $(z+13)(z-13)$ d) $(z+16)(z-9)$

Difference of Squares

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21. Factor completely: $27y^3 - 64$

a) $(3y-4)^3$
b) $(3y-4)(9y^2+12y+16)$
c) $(3y-4)(3y^2+12y+16)$
d) $(3y-4)(9y^2-24y+16)$

can factor Sum or difference of cubes

(cube root cube root) (square it multiply square it)
signs SOP (same opposite positive)
$(3y \quad 4)(9y^2 \quad 12y \quad 16)$

---

22. Factor the expression $2x^2 - 32$ completely.

GCF

a) $(2x+8)(x-4)$ b) $(x+4)(2x-8)$
c) $2(x+4)(x-4)$ d) $2(x+8)(x-8)$

$2(x^2-16) = 2(x+4)(x-4)$
diff of Squares

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23. Solve the equation $3(2p+4) - 7 = 5(2p+2) - 4p$.

a) $\frac{3}{5}$ b) $\frac{5}{3}$
c) 5 d) no solution

$6p+12-7 = 10p+10-4p$
$6p+5 = 6p+10$
$5 = 10$
No Solution

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24. Find the solutions for $z^2 = 3z + 40$.

a) $-4, 10$ b) $-8, 5$ c) $8, -5$ d) $-8, -5$

$z^2 - 3z - 40 = 0$
$(z-8)(z+5) = 0$
$z = 8$ or $z = -5$

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25. Solve: $2c^2 = -3c$

a) $0, -\frac{3}{2}$ b) $10, \frac{5}{2}$ c) $15, 4$ d) $18, 6$

$2c^2 + 3c = 0$
$c(2c+3) = 0$
$c = 0$ or $2c+3=0$
$2c = -3$
$c = -3/2$

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26. Which equation below has the solutions $x = 4$ or $x = 5$?

a) $x^2 - 9x + 20 = 0$ b) $x^2 - 4x + 25 = 0$
c) $x^2 + 9x - 20 = 0$ d) $x^2 + 9x + 25 = 0$

$x = 4 \Rightarrow x - 4 = 0$
$x = 5 \Rightarrow x - 5 = 0$
$(x-4)(x-5) = 0$
$x^2 - 5x - 4x + 20 = 0$
$x^2 - 9x + 20 = 0$

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27. Which of the following is the quadratic formula for all real values of a, b, and c where $a \neq 0$?

a) $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ b) $x = \dfrac{b \pm \sqrt{b^2 + 4ac}}{2c}$
c) $x = \dfrac{-b \pm \sqrt{b^2 - 4a}}{2ac}$ d) $x = \dfrac{b \pm \sqrt{b^2 - 4ac}}{2a}$

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28. Solve: $5(2x+1) > 2(4x+6)$

a) $x > \frac{5}{2}$ b) $x > 3$ c) $x > \frac{7}{2}$ d) $x > 7$

$10x + 5 > 8x + 12$
$2x + 5 > 12$
$2x > 7$ $\quad x > 7/2$

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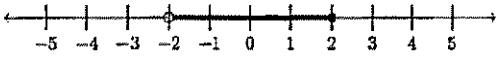
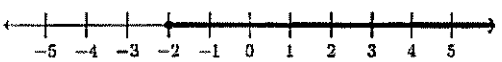
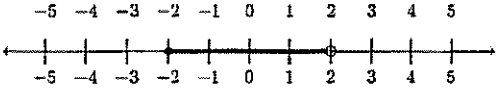
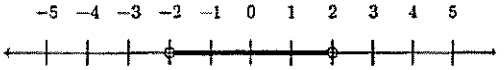
29. Which of the following is the graph of the compound inequality $-5 < 3x + 1 \leq 7$?

a)


b)


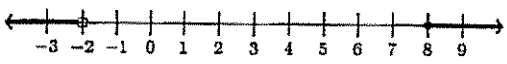
c)


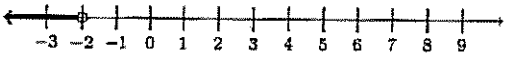
d)


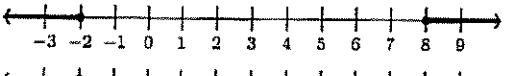
$-5 < 3x+1$ and $3x+1 \leq 7$
$-6 < 3x$ $\quad 3x \leq 6$
$-2 < x$ AND $x \leq 2$

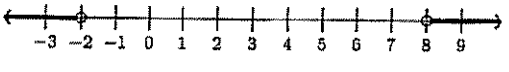
$-2 < x \leq 2$
AND looks like bookends

30. Which of the following is the graph of the compound inequality $2 - 3x > 8$ or $3x - 15 > 9$?

a) 

b) 

c) 

(d) 

$2-3x>8$ $\quad -3x>6$ $\quad x<-2$ or $\quad 3x-15>9$ $\quad 3x>24$ $\quad x>8$ OR looks like oars in the water

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31. Solve the inequality $|4x + 7| < 21$.

a) $-\frac{7}{2} < x < 8$ (b) $-7 < x < -\frac{7}{2}$

(c) $-7 < x < \frac{7}{2}$ d) no solution exists

$4x+7<21$ AND $4x+7>-21$

$4x<14$ $\quad 4x>-28$

$x<\frac{14}{4}$ $\quad x>-7$

$x<7/2$ $\quad -7<x<7/2$

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32. Solve: $|2x + 7| > 11$

a) $x < -9$ (b) $x > 2$ or $x < -9$

c) $x < -2$ or $x > 9$ d) no solution exists

$2x+7>11$ or $2x+7<-11$

$2x>4$ $\quad 2x<-18$

$x>2$ or $x<-9$

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33. In the equation $d = rt$ solve for t.

a) $t = dr$ b) $t = d - r$

(c) $t = \frac{d}{r}$ d) $t = \frac{d}{t}$

$\frac{d}{r}=\frac{rt}{r}$

$t=\frac{d}{r}$

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34. If there is no solution to a system of two linear equations, then the graphs of the equations could be _____.

a) two perpendicular lines

(b) two parallel lines

c) two lines that do not intersect (lines that do not intersect could be in different planes)

d) a single line

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35. If $y = 2x$ and $x + y = 6$, find the value of x.

a) 0 b) 1 (c) 2 d) 4

$x+2x=6$

$3x=6$

$x=2$

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36. Solve the system: $-2x + y = 5$ $\xrightarrow{\times 2}$ $-4x+2y=10$

$-6x - 2y = -5$ $\quad -6x-2y=-5$

$-10x=5$

$x=-1/2$

a) $(-2, -4)$ b) $(-\frac{5}{2}, -\frac{1}{4})$

c) $(\frac{1}{2}, -4)$ (d) $(-\frac{1}{2}, 4)$

$-2(-1/2)+y=5$

$1+y=5$

$y=4$

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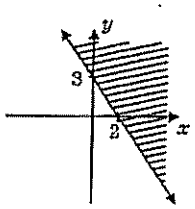
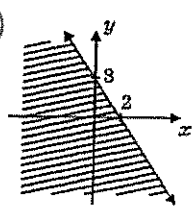
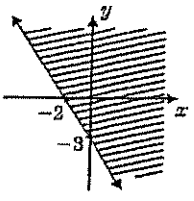
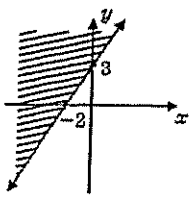
37. Which graph represents the inequality $3x + 2y \leq 6$?

a) 

(b) 

c) 

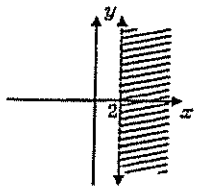
d) 

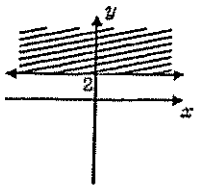
x-int @ 2

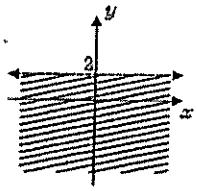
y-int @ 3

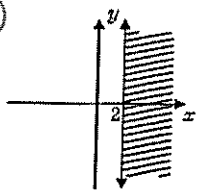
$\leq$ ⇒ shade below solid line

38. Which graph represents the inequality $x \geq 2$?

a) 

b) 

c) 

(d) 

solid line
> ⇒ to right

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39. In the ordered pair (x, y) the value x is said to be an element from the _____.

a) relation
b) function
(c) domain
d) graph

(x, y) (Domain, Range)
Both Alphebetical order

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40. In the ordered pair (x, y), the element from the range of the relation is _____.

(a) y
b) both x and y
c) x only if x is positive
d) y only if y is positive

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41. A set of ordered pairs in which each first component corresponds to exactly one second component is called a _____.

a) relation
(b) function
c) range
d) graph

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42. A function is a relation where _____.

a) each value in the range corresponds to one value in the domain
(b) each value in the domain corresponds to one value in the range
c) the value in the domain equals the value in the range
d) the value in the domain never equals the value in the range

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43. Which of the following relations is not a function?

Not Function ~~I.~~

x	2	-1	7	-1
y	9	2	0	3

if x is repeating, it is cheating

Function II.

x	5	−7	−1	3
y	6	9	0	6

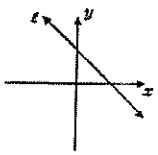
Function III.

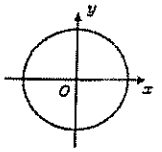
x	9	1	5	11
y	3	2	6	12

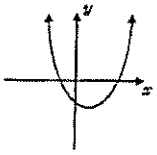
(a) I only
b) II only
c) III only
d) I and III only

x → boys
y → girls
II - #6 is getting calls from 2 diff. boys OK

44. Determine which of the following graphs is a function.

I. 

II. 

III. 

a) II only
b) III only
c) I and III only
d) II and III only

passes vertical line test

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45. If $a(n) = 3 + (n-1) \cdot 9$, find the functional value $a(8)$.

a) 60
b) 66
c) 78
d) 82

$a(8) = 3 + (8-1) \cdot 9$
$= 3 + 7 \cdot 9 = 66$

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46. In the symbol $\sqrt[n]{\ }$, the n is called the _____.

a) root index
b) radical
c) square root
d) divisor

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47. Which expression is equivalent to $\sqrt{\frac{48x^2y^5}{25z^4}}$? (Assume that all variables are positive.)

a) $\frac{4xy^2\sqrt{3y}}{5z^2}$
b) $\frac{8xy^2\sqrt{3y}}{5z^2}$
c) $\frac{4x^2y^2\sqrt{3y}}{5z^2}$
d) $\frac{16xy^2\sqrt{3y}}{25z^2}$

$\frac{\sqrt{4 \cdot 4 \cdot 3 x^2 y^5}}{\sqrt{5 \cdot 5 z^4}} = \frac{2 \cdot 2 x y^2 \sqrt{3y}}{5z^2}$

$= \frac{4xy^2\sqrt{3y}}{5z^2}$

Solve.

48. Simplify the radical $\sqrt{\frac{36}{49}}$.

a) $\frac{3}{7}$
b) $\frac{6}{8}$
c) $\frac{6}{7}$
d) $\frac{8}{9}$

$\frac{\sqrt{36}}{\sqrt{49}} = \frac{6}{7}$

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49. Simplify: $3\sqrt{12} - 5\sqrt{6} + 2\sqrt{24}$

a) $3\sqrt{3} + 3\sqrt{6}$
b) $6\sqrt{3} - \sqrt{6}$
c) $9\sqrt{3} - 3\sqrt{6}$
d) $12\sqrt{3} - \sqrt{6}$

$3\sqrt{4 \cdot 3} - 5\sqrt{6} + 2\sqrt{4 \cdot 6}$
$= 3 \cdot 2\sqrt{3} - 5\sqrt{6} + 2 \cdot 2\sqrt{6}$
$= 6\sqrt{3} - 5\sqrt{6} + 4\sqrt{6} = 6\sqrt{3} - \sqrt{6}$

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50. Simplify: $8\sqrt[3]{54} + 5\sqrt[3]{16}$

a) $13\sqrt[3]{2}$
b) $18\sqrt[3]{2}$
c) $29\sqrt[3]{2}$
d) $34\sqrt[3]{2}$

$8\sqrt[3]{27 \cdot 2} + 5\sqrt[3]{8 \cdot 2}$
$= 8 \cdot 3 \cdot \sqrt[3]{2} + 5 \cdot 2\sqrt[3]{2}$
$= 24\sqrt[3]{2} + 10\sqrt[3]{2} = 34\sqrt[3]{2}$

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51. Simplify: $\sqrt{2nm^5} \cdot \sqrt{8n^3m^3}$ (Assume that all variable expressions are positive.)

a) $2n^2m^4$
b) $4n^2m^4$
c) $5n^4m^8$
d) $16n^4m^8$

$\sqrt{16n^4m^8} = 4n^2m^4$

remember - divide power on variables by the index

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52. Simplify: $\sqrt{\frac{3}{4}} \cdot \sqrt{\frac{5}{6}}$

a) $\frac{\sqrt{6}}{4}$
b) $\frac{4}{\sqrt{10}}$
c) $\frac{\sqrt{10}}{4}$
d) $\frac{\sqrt{5}}{2}$

$\frac{\sqrt{3}}{\sqrt{6}} \frac{\sqrt{5}}{\sqrt{4}} = \frac{\sqrt{3}\sqrt{5}}{\sqrt{3}\sqrt{2} \cdot 2}$

$= \frac{\sqrt{5}}{2\sqrt{2}} \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{10}}{4}$

53. Simplify the expression $\sqrt{\frac{2x^2z^4}{3y}}$. (Assume that all variable expressions are positive.)

a) $\frac{xz\sqrt{3y}}{6y}$ b) $\frac{8xz\sqrt{3y}}{6y}$

c) $\frac{xz^2\sqrt{6y}}{3y}$ d) $\frac{2x^2z^2\sqrt{3y}}{6y}$

$\frac{\sqrt{2}\ x\ z^2}{\sqrt{3}\sqrt{y}} \cdot \frac{\sqrt{3y}}{\sqrt{3y}} = \frac{xz^2\sqrt{6y}}{3y}$

54. Simplify the expression $\frac{5}{2+\sqrt{5}} \cdot \frac{2-\sqrt{5}}{2-\sqrt{5}}$.

a) $-12-2\sqrt{5}$ b) $-10+5\sqrt{5}$

c) $20+7\sqrt{3}$ d) $\frac{32+14\sqrt{5}}{2}$

$= \frac{5(2-\sqrt{5})}{4-5} = -5(2-\sqrt{5})$

$= -10+5\sqrt{5}$

55. Solve the equation $\sqrt{k}-2=5$.

a) 16 b) 25 c) 36 d) 49

$\sqrt{k} = 7$

$(\sqrt{k})^2 = 7^2 \quad k = 49$

56. What is the solution to the equation $\sqrt{3n+4}=2\sqrt{4}$? → easier $\sqrt{3n+4}=4$

a) 4 b) 10 c) 12 d) 20

$(\sqrt{3n+4})^2 = 2^2(\sqrt{4})^2$

$3n+4 = 4\cdot 4$

$3n+4 = 16$

$3n = 12$

$n = 4$

57. Which absolute value inequality is equivalent to the solution shown by the number line graph?

a) $|5-x|<6$ b) $|x-5|<6$

c) $|x+5|<3$ d) $|x-5|<3$

bookends $\Rightarrow \leq$

open ends $<$

$|x-5| < 3$

Factor.

58. $24a^2-8a^4+28a^6$

$4a^2(6-2a^2+7a^4)$

~~$(7a^2)(4a^2-5)$~~

59. $3a^2+14a+15$

$(3a+5)(a+3)$

$3a^2$ 15

Guess & check OR product = 45, sum = 14 → 9 & 5

$(3a^2+9a)+5a+15$

$3a(a+3)+5(a+3)$

60. $n^2-16n+64$

prod = 64, + or − to 16: 8 + 8

$(n-8)(n-8)$

$= (n-8)^2$

61. $(7a-7b)+a^2-ab$

$7(a-b) + a(a-b)$

$(a-b)(7+a)$

62. b^3+8 (cube root, cube root) (Square it, multiply them, Square it)

$(b+2)(b^2-2b+4)$

Signs SOP

63. $125c^3-w^3$

$(5c-w)(25c^2+5cw+w^2)$

Solve.

64. $3|g-11|=33$

$|g-11| = 11$

$g-11=11$ or $g-11=-11$

$g=22$ or $g=0$

---

65. $\frac{-2c}{3} < 9$

$-2c < 27$

$c > -\frac{27}{2}$

Simplify.

66. $\sqrt[3]{8a^3} = 2a$

---

67. $\sqrt{23}\cdot\sqrt{23} = 23$

lift the radical

---

68. $\sqrt{8a}\cdot\sqrt{12a^6}$

$\sqrt{4\cdot 2a\cdot 4\cdot 3a^6}$

$= 2\cdot 2a^3\sqrt{2a\cdot 3}$

$= 4a^3\sqrt{6a}$

Rewrite without any exponents.

69. $2^{\frac{1}{2}} = \sqrt{2}$

Express in terms of i.

70. $\sqrt{-40} = \sqrt{4\cdot 10}\ \sqrt{-1}$

$= 2i\sqrt{10}$

---

71. $\sqrt{\frac{-1}{36}} = \frac{\sqrt{-1}}{\sqrt{36}} = \frac{i}{6}$

Simplify.

72. $(12-11i)+(4-9i)$

$16-20i$

---

73. $(12+4i)-(7+2i)$

$12+4i-7-2i$

$= 5+2i$

---

74. $-5(4-7i)$

$-20+35i$

Find the product of the number and its conjugate.

75. $(9-3i)(9+3i)$

$= 81+27i-27i-9i^2$

$= 81-9(-1) = 90$

Solve.

76. $c^2=10$

$c = \pm\sqrt{10}$

77. $a^2 - a + 1 = 0$

$a = \frac{1 \pm \sqrt{1 - 4(1)(1)}}{2(1)} = \frac{1 \pm \sqrt{-3}}{2}$

$a = \frac{1 \pm i\sqrt{3}}{2}$

---

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

$\xrightarrow{\times -1}$ $-x - y = 2$
$3x + y = 4$
$2x = 6$
$x = 3$

$3 + y = -2$
$y = -5$

$(3, -5)$

Simplify, using scientific notation.

79. $\frac{8.1 \times 10^4}{2.7 \times 10^{-4}}$

$\frac{8.1}{2.7} \times 10^{4-(-4)}$

$= 3 \times 10^8$

Fill in each blank with the correct symbol (<, >, or =).

80. $-16\sqrt{4} \_\_ -4\sqrt{16}$

$-16(2) \quad -4 \cdot 4$
$-32 < -16$

Simplify.

81. $(w - 6)(w + 6) + (5w - 1)(2w + 3)$

$= (w^2 + 6w - 6w - 36) + (10w^2 + 15w - 2w - 3)$
$= w^2 - 36 + 10w^2 + 13w - 3$
$= 11w^2 + 13w - 39$

---

82. The polynomial $(3x^2y^3 - 7x^5y^2 + 8y^6)$ is what degree?

$\downarrow \quad \downarrow \quad \downarrow$
$5 \quad 7 \quad 6$

degree 7

Solve by completing the square.

83. $w^2 + 18w + 80 = 0$

$w^2 + 18w = -80$
$(w^2 + 18w + 81) = -80 + 81$
$(w + 9)^2 = 1$
$w + 9 = \pm 1$

$w = -9 + 1 = -8$ or $w = -9 - 1 = -10$

Find the x- and y-intercepts for each line.

84. $10x + 2y = -20$

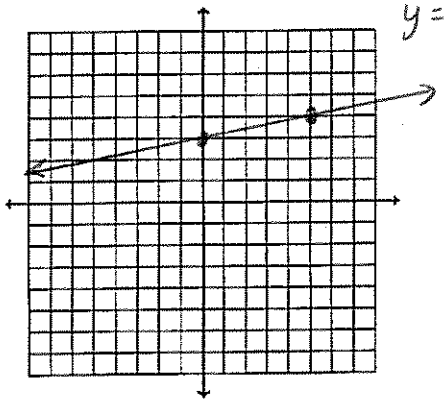
$10x = -20 \qquad 2y = -20$
$x = -2 \qquad y = -10$

Graph.

85. $-x + 5y + 15 = 0$

$5y = x + 15$

$y = \frac{1}{5}x + 3$



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86. Write the equation of the line that contains $(-12, 5)$ and is perpendicular to the line $y = 3x + 6$.

$\perp m = -1/3$

$y = mx + b$
$5 = -1/3(-12) + b$
$5 = 4 + b \qquad b = 1$

$y = -1/3x + 1$

Simplify.

87. $\frac{\sqrt[3]{750}}{\sqrt[3]{3}} = \sqrt[3]{250} = \sqrt[3]{5\cdot5\cdot5\cdot2}$

$= 5\sqrt[3]{2}$

---

88. i^{29} $4\overline{)29}$ -28 (1) $= i$

---

89. $\frac{-5}{6i} \cdot \frac{i}{i} = \frac{-5i}{6i^2} = \frac{-5i}{-6}$

$= \frac{5i}{6}$

Solve for the indicated variable.

90. $p^2 + 32 = 128$

$p^2 = 96$

$p = \pm\sqrt{96} = \pm\sqrt{16\cdot6}$

$p = \pm 4\sqrt{6}$

Solve. $a=1 \quad b=6 \quad c=1$

91. $0 = p^2 + 6p + 1$

$p = \frac{-6 \pm \sqrt{36-4}}{2} = \frac{-6 \pm \sqrt{32}}{2}$

$= \frac{-6 \pm 4\sqrt{2}}{2} = \frac{2(-3 \pm 2\sqrt{2})}{2}$

---

92. Find the reciprocal of $-9 + 2i$.

$\frac{1}{-9+2i} \cdot \frac{-9-2i}{-9-2i} = \frac{-9-2i}{81-4i^2}$

$= \frac{-9-2i}{81+4} = \frac{-9-2i}{85}$

---

93. Solve the equation $P = 2\ell + 2w$ for w.

$P = 2(l+w)$

$\frac{P}{2} = l + w$

$w = \frac{P}{2} - l$

a) $w = P - 2\ell - 2$ b) $w = \frac{P}{2} - \frac{\ell}{4}$

c) $w = \frac{P-2\ell}{2}$ d) $w = \frac{P-\ell}{4}$

or $P - 2l = 2w$ $w = \frac{P-2l}{2}$

---

94. Solve for F in the equation $C = \frac{5}{9}(F - 32)$ $\frac{9}{5}C = F - 32$

a) $F = 32 - \frac{9}{5}C$ b) $F = C + \frac{32}{5}$ $F = \frac{9}{5}C + 32$

c) $F = \frac{9}{5}C + 32$ d) $F = \frac{5}{9}C - 32$

---

95. If a system of two equations is independent, then the graphs of the two equations _____.

a) are parallel lines

b) are perpendicular lines

c) do not intersect (lines that do not intersect may not be in the same plane)

d) intersect at one point

---

96. Find the vertex and axis of symmetry for the parabola $y = 4x^2 + 8x + 6$.

a) $(-1, 1)$; $x = -1$ b) $(1, 0)$; $x = 0$

c) $(-1, 2)$; $x = -1$ d) $(10, 1)$; $x = 10$

---

97. Find the x-intercepts of the parabola $y = x^2 - 2x - 15$. → roots, zeros, solutions

$(x-5)(x+3) = 0$

$x = 5$ or $x = -3$

a) $(-2, 0)$, $(8, 0)$ b) $(-3, 0)$, $(5, 0)$

c) $(-7, 0)$, $(2, 0)$ d) $(-9, 0)$, $(1, 0)$

---

98. Write the equation of the parabola that opens up, has a vertex $V(2, -3)$, and is congruent to $y = x^2$. Answer in the form $y = a(x - h)^2 + k$.

a) $y = (x-2)^2 + 3$ b) $y = (x+2)^2 + 3$

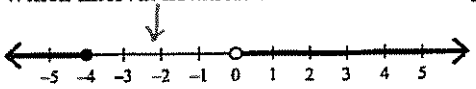
c) $y = (x-2)^2 - 3$ d) $y = 2x^2 - 3$

$y = (x-2)^2 - 3$

Algebra 2 **Name:** _____ **Period:** _____ **Date:** _____

Exam Review Continued

99. Which interval notation matches the following graph?



a. $(-\infty,-4)\cup(0,\infty)$ oars in water

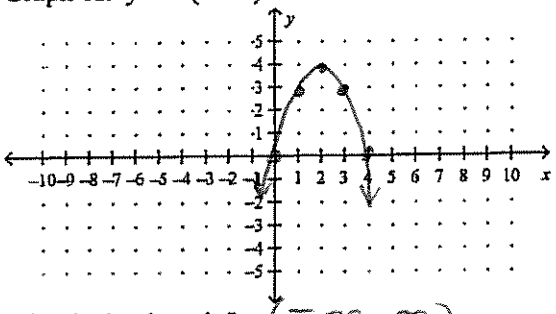
b. $(-\infty,\infty)$ OR ?

c. $(-\infty,-4]\cup(0,\infty)$

d. $[-4,0)$ ~~x ≤ 1~~

For the next two questions, use interval notation. When asked to determine increasing or decreasing, find the interval on which the ~~domain~~ values are increasing or decreasing. domain / function's

100. Graph of: $y=-(x-2)^2+4$.



What is the domain? $(-\infty,\infty)$

What is the range? $(-\infty,4]$

Increasing? $(-\infty,2)$

Decreasing? $(2,\infty)$

What are the x-intercepts? $x=0$ and $x=4$

What is another name for the x-intercepts?
zeros, roots, solutions

What is the y-intercept? $y=0$ (origin)

101. Graph $y=\frac{1}{2}|x-3|-7$ on your graphing calculator.

What is the domain? $(-\infty,\infty)$

What is the range? $[-7,\infty)$

Increasing? $(3,\infty)$

Decreasing? $(-\infty,3)$

102. Solve the following system by your choice of methods: $\begin{cases} y=-x^2+4x+4 \\ y=2x-4 \end{cases}$

$-x^2+4x+4=2x-4$

$0=x^2-2x-8$

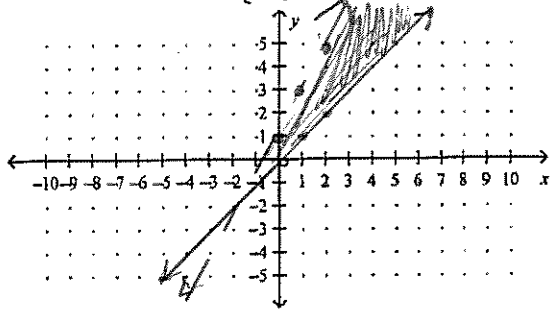
$(x-4)(x+2)=0$

$x=4$ or $x=-2$

$y=4$ $y=-8$

Solution: $(4,4)$ or $(-2,-8)$

103. Solve by graphing: $\begin{cases} y<2x+1 \\ y\geq x \end{cases}$



104. Solve by graphing: $\begin{cases} y<\frac{1}{2}|x|-3 \\ y\leq -x^2+5 \end{cases}$