

ALGEBRA II

FINAL EXAM REVIEW PACKET

[CHAPTER 1]

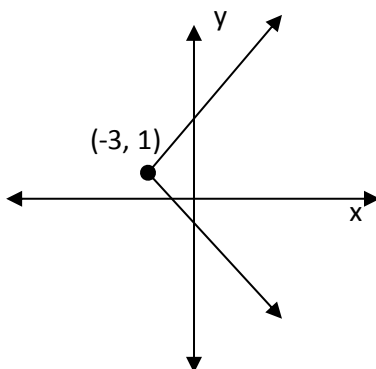
Determine whether each relation is a function (yes or no), then find its domain and range.

1) $\{(2,-2),(-1,0),(-2,9)\}$

yes / no

D = _____ R = _____

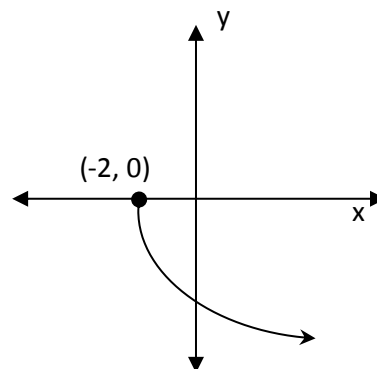
2)



yes / no

D = _____ R = _____

3)



yes / no

D = _____ R = _____

Given the function: $f(x) = 2x^2 + 1$, find:

4) $f(-3)$

5) $f(b + 1)$

Find the slope for each problem.

6) $y = -6x - 11$

7) passes thru $(1, -4)$ & $(-2, 7)$

8) Is perpendicular to the line with equation: $3y + 5 = 2x$

Write an equation in slope-intercept form ($y = mx + b$) for the line described.

9) slope = 2, passes thru $(1, 3)$

10) parallel to $y + 3x = -1$, passes thru $(-9, -2)$

Use the following equation: $-4y = 7x + 12$, to find...

11) x-intercept?

12) y-intercept?

13) standard form

[CHAPTER 2]

Solve each system of equations.

14) $y = 2x - 5$
 $4y - x = 1$

15) $4x + 7y = -1$
 $2x + y = 7$

[CHAPTER 3]

Simplify.

16) $3(2x - 8) - (7 - 5x)$

17) $(3y - 4)^2$

18) $(5x^4)^2(x^3y^{-1})^{-3}$

Divide using synthetic division.

19) $(2x^3 - 4x + 9) \div (x + 2)$

What is the degree and leading coefficient for...

20) $f(x) = 2x^3 - 10x + 5 - x^4 + 7x^2$

degree = _____

leading coefficient = _____

[CHAPTER 4]

Factor completely.

21) $8y^3 - 27$

22) $25d^2 - 4$

23) $3x^3 - 6x^2 - 45x$

[CHAPTER 5]

Simplify the complex number problems.

24) $(11 - 2i) - (6i - 9)$

25) $(8 - 3i)^2$

26) i^{327}

Solve each quadratic equation by factoring (27), complete the square (28) or the quadratic formula (29).

27) $y^2 - 2y - 63 = 0$

28) $x^2 + 6x - 1 = 0$

29) $7k^2 = 4k + 1$

Use the equation $y = -\frac{2}{3}(x + 5)^2 - 6$ to determine the following:

30) vertex = ?

31) axis of symmetry = ?

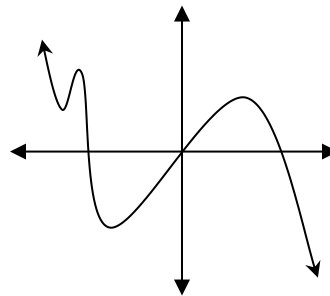
32) direction of opening
(up or down)

[CHAPTER 6]

Solve by factoring.

Use the graph below to answer 34-36.

33) $2x^4 - 32x^2 = 0$



34) Is the degree even or odd?

35) How many real zeros?

36) What is its end behavior?

Use the rational root theorem to list all the possible p's & q's for the given function.

37) $f(x) = 4x^3 - 9x - 10$ p: _____ q: _____ p/q: _____

[CHAPTER 7]

Give the inverse for each function.

38) $f = \{ (0,-9), (-1,-1), (0.8,12), (-2,11) \}$

39) $f(x) = 6x + 8$

[CHAPTER 8]

Simplify the radical problems.

40) $4\sqrt[3]{16}$

41) $5\sqrt{8} - 6\sqrt{50} + 4\sqrt{18}$

42) $\sqrt[6]{64j^{12}k^7}$

43) $(3 + \sqrt{5})(2 + 2\sqrt{5})$

44) Solve the equation:
 $\sqrt{3x-2} = 5$

45) Solve the inequality:
hint: don't forget the "and"
 $\sqrt{x+7} - 3 \geq 8$

Change from radical form to an expression
using a rational (fraction exponent)

Multiply or divide the rational expressions.

Evaluate.

46) $\sqrt[3]{125wx^6y^4}$

47) $36^{1/2} \cdot 16^{-1/4}$

[CHAPTER 9]

Simplify the rational expressions.

48) $\frac{7ab}{9c} \cdot \frac{81c^2}{49a^2b}$

49) $\frac{x^2 - y^2}{a^2 - b^2} \div \frac{x - y}{a + b}$

50) $\frac{2-x}{3v^2} \cdot \frac{9v^3}{x-2}$

Add, subtract or solve.

51) $\frac{x+2}{x-1} + \frac{6}{7x-7}$

52) $\frac{7}{5a} - \frac{10}{3b}$

53) $a - \frac{5}{a} = 4$

Name the restrictions (excluded values) for 54-55.

Solve 56.

$$54) \quad \frac{1}{x} + \frac{x-2}{x+2} = \frac{8}{3x-4}$$

$x \neq$ _____

$$55) \quad \frac{2b}{b^2 - 15b + 56} = \frac{5}{3b^2 - 19b - 14}$$

$b \neq$ _____

$$56) \quad \frac{1}{x+1} = \frac{x+6}{x^2}$$

[CHAPTER 10]

Solve the logarithmic or exponential equations.

$$57) \quad 9^{x-1} = 27^{2x+3}$$

$$58) \quad \log_2\left(\frac{1}{4}\right) = n$$

$$59) \quad \log_7 x - \log_7 9 = \log_7 5$$

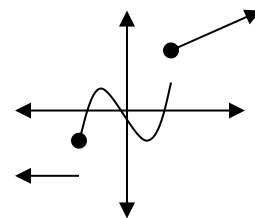
[IN GENERAL]

Match the name of the function on the left with the equation or graph shown to the right.

60)___ Direct variation

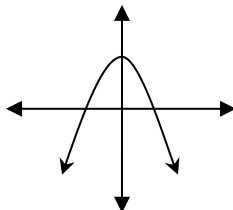
$$(a) \quad f(x) = \frac{x}{2x-1}$$

(b)



61)___ Absolute value

(c)



$$(d) \quad f(x) = [x] - 3$$

62)___ Piecewise

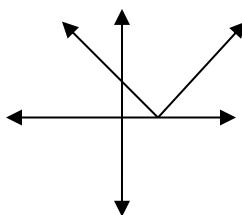
$$(e) \quad f(x) = -2$$

$$(f) \quad f(x) = -2x + 9$$

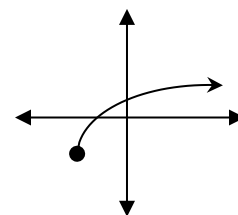
63)___ Greatest Integer

64)___ Quadratic

(g)



(h)



65)___ Rational

66)___ Square root

67)___ Constant

[CHAPTER 1]

- | | | |
|------------------------------------|--|------------------------------|
| 1) yes | 2) no | 3) yes |
| $D=\{2, -1, -2\}$ $R=\{-2, 0, 9\}$ | $D: x \geq -3$ $R: \text{all real no.s}$ | $D: x \geq -2$ $R: y \leq 0$ |
| 4) 19 | 5) $2b^2 + 4b + 3$ | |
| 6) $m = -6$ | 7) $-11/3$ | 8) $m = -3/2$ |
| 9) $y = 2x + 1$ | 10) $y = -3x - 29$ | |
| 11) $-12/7$ | 12) -3 | 13) $7x + 4y = -12$ |

[CHAPTER 2]

- | | |
|------------|-------------|
| 14) (3, 1) | 15) (5, -3) |
|------------|-------------|

[CHAPTER 3]

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|-------------------------------------|--|-----------------------|
| 16) $11x - 31$ | 17) $9y^2 - 24y + 16$ | 18) $\frac{25y^3}{x}$ |
| 19) $2x^2 - 4x + 4 + \frac{1}{x+2}$ | 20) degree = 4, leading coefficient = -1 | |

[CHAPTER 4]

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|-------------------------------|------------------------|------------------------|
| 21) $(2y - 3)(4y^2 + 6y + 9)$ | 22) $(5d - 2)(5d + 2)$ | 23) $3x(x - 5)(x + 3)$ |
|-------------------------------|------------------------|------------------------|

[CHAPTER 5]

- | | | |
|---------------------|----------------------------|--|
| 24) $20 - 8i$ | 25) $55 - 48i$ | 26) $-i$ |
| 27) $y = 9, y = -7$ | 28) $x = \pm\sqrt{10} - 3$ | 29) $k = 0.8, k = -0.2$ (calculator program) |
| | | or $k = \frac{2 \pm \sqrt{11}}{7}$ (quadratic formula) |
| 30) $(-5, -6)$ | 31) $x = -5$ | 32) the "U" faces down |

[CHAPTER 6]

- | | | |
|--------------------------|------------------|--|
| 33) $x = 0, \pm 4$ | | |
| 34) odd | 35) 3 | 36) $+\infty, -\infty$ |
| 37) $p: \pm 1, 2, 5, 10$ | $q: \pm 1, 2, 4$ | $p/q: \pm 1, 2, 5, 10, 1/2, 5/2, 1/4, 5/4$ |

[CHAPTER 7]

38) $\{(-9,0), (-1,-1), (12, 0.8), (11, -2)\}$	39) $f^{-1}(x) = \frac{x-6}{8}$ or $\frac{x}{8} - \frac{3}{4}$
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[CHAPTER 8]

40) $8\sqrt[3]{2}$	41) $-8\sqrt{2}$	42) $2j^2k\sqrt[6]{k}$
43) $16+8\sqrt{5}$	44) $x = 9$	45) $x \geq 114$
46) $5w^{\frac{1}{3}}x^2y^{\frac{4}{3}}$	47) 3	

[CHAPTER 9]

48) $\frac{9c}{7a}$	49) $\frac{x+y}{a-b}$	50) $-3v$
51) $\frac{7x+20}{7(x-1)}$	52) $\frac{21b-50a}{15ab}$	53) $a = 5, a = -1$
54) $x \neq 0, -2, 4/3$	55) $b \neq 7, 8, -2/3$	56) $x = -6/7$

[CHAPTER 10]

57) $x = -11/4$	58) $n = -2$	59) $x = 45$
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[IN GENERAL]

60) f	61) g	62) b
63) d	64) c	65) a
66) h	67) e	