

MIDTERM EXAM REVIEW  
ALGEBRA 2 HONORS

Radicals: (Simplify)

①  $4\sqrt{2} - 8\sqrt{2}$       ②  $\sqrt{56a^3b^5c^6}$       ③  $(5\sqrt{5} + \sqrt{3})(\sqrt{5} - \sqrt{3})$

Chapter 1:

④ Solve for x:  $\frac{2x+1}{4} - \frac{x+3}{3} = \frac{10}{12}$       ⑤ solve:  $\frac{1}{2}x - \frac{5}{3} = -\frac{1}{2}x + \frac{19}{4}$

⑥ Solve:  $-5(2x-1) = 3(x+4) - 2$       ⑦ solve:  $\frac{3}{4} + 3(x+1) = \frac{5}{4}(2x+5)$

⑧ Solve for  $b_1$ :  $A = \frac{1}{2}h(b_1 + b_2)$       ⑨ solve:  $2|2x-6| - 8 = 12$

⑩ solve:  $|5x-2| > 10$  (answer in interval notation)

⑪ solve:  $3a+1 < -2$  or  $3a+1 > 7$

⑫ solve:  $5(x+2) > x-5$  (answer in interval notation)

⑬ solve:  $|3x+4| \leq 2$

Chapter 2:

⑭ Given  $f(x) = 3x+4$  and  $g(x) = x^2-5$ , find  $f(2)$  and  $g(-3)$

⑮ Find the slope of the line passing through  $(-6, 2)$  and  $(3, 5)$

⑯ Find the general form of the equation of the line that passes through  $(-2, 5)$  and is perpendicular to  $x-3y+6=0$

⑰ Find the equation of the line that passes through  $(2, 10)$  and is parallel to  $x-4y=2$  (slope-intercept form)

⑱ Find the equation of the line that passes through  $(3, -8)$  and  $(8, 2)$ . (slope-intercept form).

⑲ write the equation of the line that passes through  $(-4, 1)$  and has a slope of 3 (slope-intercept form).

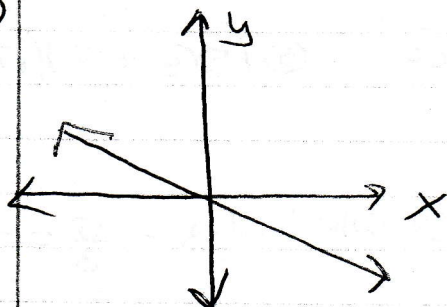
⑳ Determine the x and y intercepts of  $4x+3y=12$

㉑ graph  $y = |x+3| - 2$

㉒ graph:  $3x + 4y = -12$

## chapter 2 (continued):

(23)



Describe interval of increasing, decreasing, or constant.

(24)

a) Graph  $f(x) = \begin{cases} x-2 & \text{if } x \geq 0 \\ x+2 & \text{if } x < 0 \end{cases}$  and

b) find  $f(-2)$

## Chapter 3:

(25)

Solve:  $\begin{cases} -6x + 5y = 4 \\ 7x - 10y = -8 \end{cases}$

(26)

Solve:  $\begin{cases} 3x + 2y = -3 \\ x + \frac{1}{3}y = -4 \end{cases}$

(27)

graph the solution set of  $\begin{cases} x+y \geq -2 \\ -5x+y \leq -3 \end{cases}$

(28)

Sketch the graph of the plane with equation  $5x + 4y + 2z = 20$

(29)

Solve for b:  $\begin{aligned} 9a + 7b &= -30 \\ 8b + 5c &= 11 \\ -3a + 10c &= 73 \end{aligned}$

(2)

### Chapter 4:

- (30) Evaluate the determinant of  $A = \begin{bmatrix} -1 & -3 \\ 4 & 5 \end{bmatrix}$
- (31) Evaluate the determinant of  $A = \begin{bmatrix} 1 & 1 & 3 \\ -2 & 0 & 2 \\ 5 & -1 & -4 \end{bmatrix}$
- (32) Determine the order of the matrix  $\begin{bmatrix} -6 & 4 & 3 & 2 \\ 1 & 0 & 4 & -1 \end{bmatrix}$
- (33) Solve for  $x$ :  $\begin{vmatrix} 4+2x & 3 \\ x-1 & -8 \end{vmatrix} = 10$
- (34) Use Cramer's Rule to set up the value of  $x$  for:  
 $8x - 6z = 38$   
 $2x - 5y + 3z = 5$   
 $x + 10y - 4z = 8$
- (35) Use a determinant to find the area of the triangle with vertices  $(2, 1)$ ,  $(5, 3)$ , and  $(7, 1)$ .

### Chapter 5:

- (36) Determine the vertex and axis of symmetry of the quadratic function:  $f(x) = 2x^2 - 4x + 5$
- (37) graph:  $f(x) = (x-2)^2 - 4$
- (38) Factor!  $25x^2 - 64$
- (39) Factor!  $(x-3)^2 - 25$
- (40) Solve by factoring: a)  $2x(4x+9) = -4$   
b)  $2x^3 + x^2 - 18x - 9 = 0$

### Chapter 5 Continued

- (41) Solve by Quadratic formula:  $5x^2 - 7x + 2 = 0$
- (42) Solve:  $x^2 - 2x - 15 < 0$
- (43) Use the square root method to solve:  $3x^2 + 24 = 0$
- (44) Simplify and write in standard form: a)  $(6+3i) + (8-5i)$   
b)  $(-3+5i)(2-3i)$
- (45) Write  $\sqrt{-24} + 6$  in standard form
- (46) Write  $\frac{3i}{2-4i}$  as a complex # in standard form.

### Chapter 6

- (47) Determine the number of terms and the degree of the polynomial:  $x^4 + x^3yz + xy^3 + y^4$
- (48) Simplify:  $\frac{12xy}{7x^4} \cdot \frac{7x^5y^2}{4y}$
- (49) Simplify:  $\left( \frac{2a^3b^7c^4}{5ab^3} \right)^3$
- (50) Simplify:  $(-4x-5y)^0 (2^{-1}xy^3)^3$
- (51) Simplify:  $(3a-b)^2 + (2a+b)^2$
- (52) Simplify:  $(5x^2-4x+2) - (8x^2+5x-3)$
- (53) Factor:  $8x^3-125y^3$
- (54) Divide:  $x^3+2x^2-6x-9$  by  $x+3$

Chapter 6 continued:

(55) List the possible rational zeros of:  $3x^4 + 2x^3 - x + 15$

(56) Solve the equation:  $x^4 + 3x^3 + 3x^2 - 3x - 4 = 0$

(57) Sketch the graph of:  $f(x) = -(x+1)(x-2)^2$

(58) Find the polynomial of degree 3 that has zeros:  $-3$  and  $i$

(59) Simplify:  $\left[ \frac{2a^3bc^5}{3ab^3} \right]^3$

(60) Evaluate:  $\frac{4}{3^{-3}}$