

Algebra 2

	Day	Date	Video	Assignment Due	Is it done?
33	Monday	5/4/2020		10.4-5 quiz	
34	Tuesday	5/5/2020	10.6		
35	Wednesday	5/6/2020	10.7	452: 1-14	
36	Thursday	5/7/2020		457: 1-14	
37	Friday	5/8/2020		"field trip day" - try to do something fun	
38	Monday	5/11/2020	PQ	practice quiz 10.6-7	
39	Tuesday	5/12/2020		10.6-10.7	
40	Wednesday	5/13/2020		practice test chapter 10	
41	Thursday	5/14/2020		Chapter 10	
42	Friday	5/15/2020	11.1		
	Monday	5/18/2020	11.2	467: 1-14 (sheet to replace 3c/3d/4c/4d)	
	How many total did you do:				

Zoom session happen Mon/Wed/Fri at 2:30 for those needing any help

**[NOTE - PRACTICE FINALS ALSO
ARE INCLUDED IN THIS PACKET
IN CASE ANYBODY WANTS TO
START TO WORK AHEAD ON THOSE]**

We usually do these during a school day in May.
Please return this form at the 5-18 dropoff/pickup day.
It helps TMR to work up a class schedule for next year.
Thank you.

Name _____	Grade Next Year _____	2020-21 Pre-Schedule Form
I expect to be at CCA _____	Elsewhere _____	Don't Know _____
Math _____		
General Math _____	Algebra 1 _____	Trigonometry _____
Pre-Algebra _____	Geometry _____	Calculus _____
French: _____		
Yes _____	No _____	Level _____
Spanish: _____		
Yes _____	No _____	Level _____
English _____		
Lunch Help _____		
9th-12th: _____		
Accelerated _____	Regular _____	
11th/12th: _____		
Physics _____	Environmental _____	
Electives (Rank your choices starting with 1 for your first choice, ranking anything you think you might take)		
Art _____	Computers _____	Girls Only _____
Boys Only _____	Cook \$ _____	Health _____
Child Dev _____	Debate _____	Keyboarding _____
College + Career _____	Drama _____	Money Mgmt _____
		Speech _____
		Video Classics _____
		Worship Team _____

Name _____

Find the center, vertices, foci, and asymptotes. Also graph number 1 and number 3. (12)

1. $\frac{x^2}{16} - \frac{y^2}{25} = 1$

center: _____
vertices: _____
foci: _____
asymptotes: _____

2. $12y^2 - 4x^2 = 48$

center: _____
vertices: _____
foci: _____
asymptotes: _____

3. $\frac{(x-3)^2}{4} - \frac{(y+2)^2}{1} = 1$

center: _____
vertices: _____
foci: _____
asymptotes: _____

Put the equation for each hyperbola in standard form. (1)

4. $9x^2 - 4y^2 + 36x + 24y - 36 = 0$

Find the vertex, focus, and directrix of the parabola. (9)

5. $x^2 = 20y$

vertex: _____

focus: _____

directrix: _____

6. $y^2 = -18x$

vertex: _____

focus: _____

directrix: _____

7. $(y+6)^2 = -16(x-5)$

vertex: _____

focus: _____

directrix: _____

Put the equation of a parabola in standard form. (2)

8. $x^2 + 6x + 2y + 3 = 0$

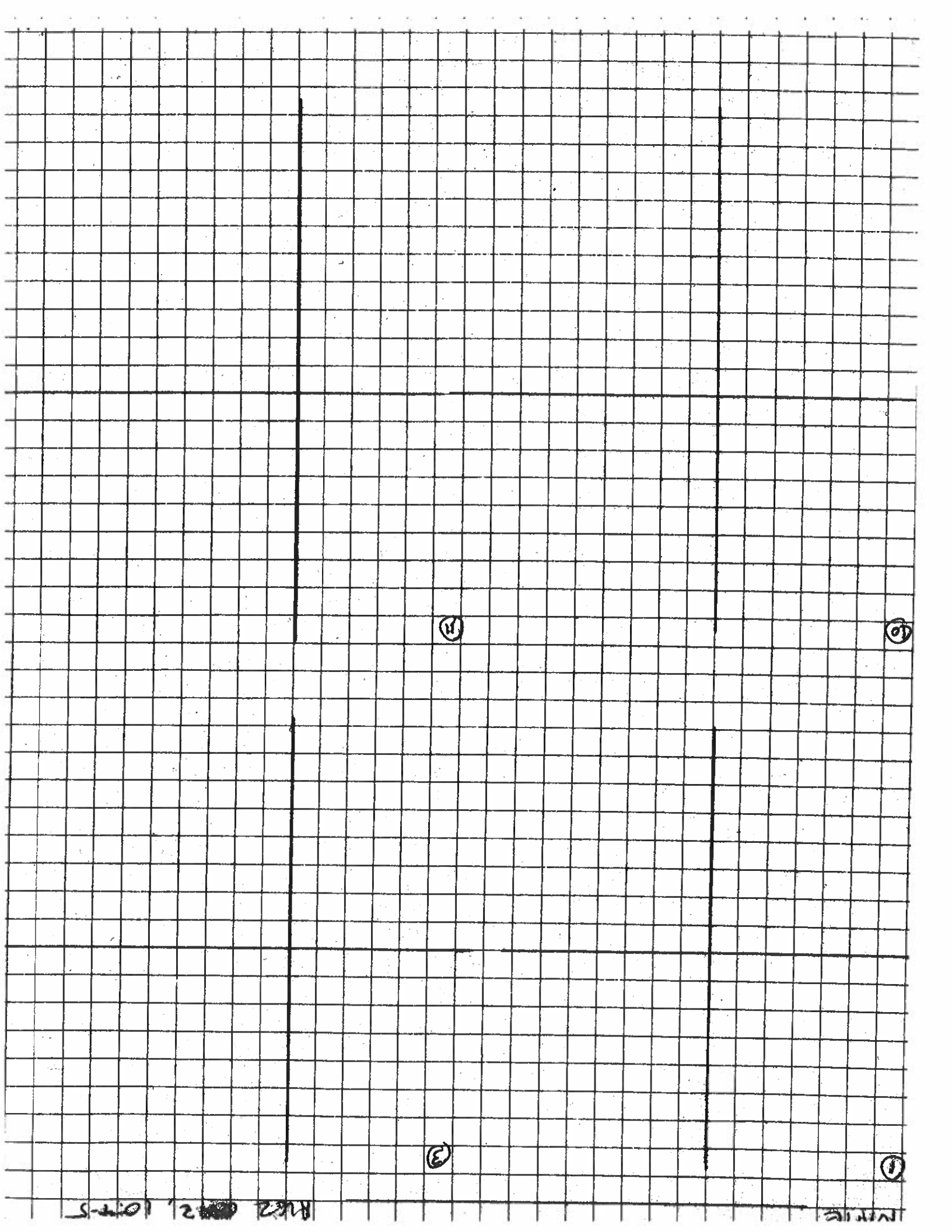
9. $4y^2 + 4y - 8x - 12 = 0$

Write an equation of a parabola satisfying the given conditions. Also graph them. (2)

10. Focus (6,0) directrix $x = -6$

11. Focus (0,-4), directrix $y = 4$

extra credit: Write an equation for a parabola with vertex (-3,-1), focus (-3,3), and directrix $y = -5$



11

12

13

14

10-15, 10-20, 10-25

10-30, 10-35, 10-40

Alg 2
10.6

149

pc1

(10.6) SOLVING SYSTEMS

"SYSTEMS OF EQUATIONS" HAVE MORE THAN 1 EQUATION AND MORE THAN 1 VARIABLE.

TO SOLVE, WE HAVE 3 METHODS

- ① GRAPHING - WHICH IS CRAZY - IT'S TOUGH TO GRAPH, FOR EXAMPLE, A HYPERBOLA AND AN ELLIPSE AND SEE WHERE THEY CROSS
- ② SUBSTITUTION - WHICH IS TODAY
- ③ MULTIPLICATION/ADDITION - WHICH IS 10.7

SUBSTITUTION

- 1) GET x OR y ALONE IN 1 EQUATION
- 2) SUBSTITUTE INTO THE OTHER EQ
- 3) SOLVE FOR THAT VARIABLE
- 4) GET THE OTHER VARIABLE BY PLUGGING INTO THE $x =$ OR $y =$ EQUATION YOU MADE IN 1)
- 5) CHECK - PUT $x + y$ BACK IN. THEY MUST MAKE BOTH EQUATIONS WORK

ex 1

$$y + 1 = x^2 - 2x$$

$$y = x + 3$$

THIS IS ALREADY $y =$,
SO START HERE. PLUG
IT INTO THE OTHER EQ
FOR y

$$x + 3 + 1 = x^2 - 2x$$

NOW SOLVE FOR x
GET $= 0$, FACTOR

$$x^2 - 3x - 4 = 0$$

$$(x - 4)(x + 1) = 0$$

$$x = 4, x = -1$$

PLUG x INTO THE

$$y = x + 3 \quad \text{WE STARTED WITH}$$

$$\text{IF } x = 4, y = 4 + 3 = 7$$

$$\text{IF } x = -1, y = -1 + 3 = 2$$

$$(4, 7) \quad (-1, 2)$$

BOTH WORK IN BOTH EQ

ex 2

$$\begin{cases} y + 3 = 2x \\ x^2 + 2xy = -1 \end{cases}$$

① $y = 2x - 3$ (FROM 1ST EQ)

② $x^2 + 2x(2x - 3) = -1$ (PLUG INTO 2ND EQ)

③ $x^2 + 4x^2 - 6x = -1$

$5x^2 - 6x + 1 = 0$ (SOLVING FOR X)

$(5x - 1)(x - 1) = 0$

$x = \frac{1}{5} \quad x = 1$

④ $y = 2(\frac{1}{5}) - 3 = -2\frac{3}{5}$

$y = 2(1) - 3 = -1$

(PLUG INTO ①)

⑤ $(\frac{1}{5}, -2\frac{3}{5}) \quad (1, -1)$

ex 3

$$\begin{cases} y + 3x = 1 \\ x^2 - 2xy = 5 \end{cases}$$

① $y = 1 - 3x$ (FROM 1ST EQ)

② $x^2 - 2x(1 - 3x) = 5$ (PLUG INTO 2ND)

③ $x^2 - 2x + 6x^2 = 5$

$7x^2 - 2x - 5 = 0$ (SOLVE FOR X)

$(7x + 5)(x - 1)$

$x = -\frac{5}{7} \quad x = 1$

④ $y = 1 - 3(-\frac{5}{7}) = 1 + \frac{15}{7} = 2\frac{2}{7}$

$y = 1 - 3(1) = 1 - 3 = -2$

⑤ $(-\frac{5}{7}, 2\frac{2}{7}) \quad (1, -2)$

ex 4

$$x^2 + y^2 = 25$$

$$3x - 4y = 0$$

① GO AFTER 2ND EQUATION

$$3x = 4y$$

$$x = \frac{4}{3}y$$

② PLUG INTO 1ST

$$\left(\frac{4}{3}y\right)^2 + y^2 = 25$$

$$\textcircled{3} \frac{16}{9}y^2 + y^2 = 25$$

$$16y^2 + 9y^2 = 225$$

$$25y^2 = 225$$

$$y^2 = 9$$

$$y = 3 \quad y = -3$$

$$\textcircled{4} x = \frac{4}{3}(3) = 4$$

$$x = \frac{4}{3}(-3) = -4$$

$$\textcircled{5} \boxed{(4, 3) \quad (-4, -3)}$$

DO 452 ; 1-14

~~ADDITION~~ ADDITION METHOD

$$\begin{aligned}x^2 - y^2 &= 2 \\x^2 + y^2 &= 6\end{aligned}$$

$$2x^2 = 8$$

ADD EQUATIONS TOGETHER TO
CANCEL y 'S

$$x^2 = 4$$

DIVIDE

$$x = 2 \text{ or } -2$$

$$4 + y^2 = 6$$

PLUG IN TO EITHER EQ.
 2^2 AND $(-2)^2$ ARE BOTH 4
1 USE 1ST EQ 2ND EQ

$$y^2 = 2$$

SUBTRACT

$$y = \sqrt{2} \text{ or } -\sqrt{2}$$

4 ANSWERS $(2, \sqrt{2})$ $(2, -\sqrt{2})$ $(-2, \sqrt{2})$ $(-2, -\sqrt{2})$
CAN ALSO WRITE AS $(\pm 2, \pm \sqrt{2})$

pg 2

$$\begin{aligned}2x^2 + 5y^2 &= 22 \\3x^2 - y^2 &= -1\end{aligned}$$

$$\begin{aligned}2x^2 + 5y^2 &= 22 \\15x^2 - 5y^2 &= -5\end{aligned}$$

MULTIPLY 2ND EQ BY 5 TO
BE ABLE TO CANCEL Y'S

$$\begin{aligned}17x^2 &= 17 \\x^2 &= 1 \\x &= \pm 1\end{aligned}$$

ADD
DIVIDE
ROOT

PLUG INTO EITHER EQ
 1^2 AND $(-1)^2$ BOTH MAKE 1

$$\begin{aligned}2 + 5y^2 &= 22 \\5y^2 &= 20 \\y^2 &= 4 \\y &= \pm 2\end{aligned}$$

$(\pm 1, \pm 2)$ IS 4 ANSWERS

10.7 CONT.

PG 7

$$x^2 + y^2 = 18$$

$$x - y^2 = -6$$

SINCE y 'S ARE OPPOSITES, ADD,
BUT REALIZE x 'S ARE UNLIKE

$$x^2 + x = 12$$

$$x^2 + x - 12 = 0$$

$$(x+4)(x-3)$$

$$x = -4 \quad x = 3$$

GET $= 0$ AND FACTOR

PUT x INTO EITHER

EQUATION - I USED THE

TOP ONE TO AVOID

NEGATIVES

$$16 + y^2 = 18$$

AND

$$9 + y^2 = 18$$

$$y^2 = 2$$

$$y = \pm\sqrt{2}$$

$$y^2 = 9$$

$$y = \pm 3$$

4 ANSWERS - CAN WRITE AS

$(-4, \pm\sqrt{2})$ $(3, \pm 3)$ OR AS

$(-4, -\sqrt{2})$ $(-4, \sqrt{2})$ $(3, 3)$ $(3, -3)$

$$x^2 + 4y^2 = 20$$

$$xy = 4$$

$$y = \frac{4}{x}$$

NO WAY TO

MAKE OPPOSITES TO ADD,

SO DO SUBSTITUTION METHOD. I CHOSE

TO GET y ALONE

FROM 2ND EQUATION

$$x^2 + 4 \cdot \frac{16}{x^2} = 20$$

$$x^2 + \frac{64}{x^2} = 20$$

$$x^4 + 64 = 20x^2$$

PLUG INTO 1ST EQUATION

MULTIPLY BY x^2 TO

CLEAR FRACTION

$$x^4 - 20x^2 + 64 = 0 \quad \text{GET } = 0 \quad \text{AND FACTOR}$$

$$(x^2 - 16)(x^2 - 4)$$

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

$$x = -4 \quad x = 4 \quad x = -2 \quad x = 2$$



PLUG INTO CIRCLED

$$y = -1$$

$$y = 1$$

$$y = -2$$

$$y = 2$$

EQUATION TO GET y

4 ANSWERS

$$(-4, -1) \quad (4, 1) \quad (-2, 2) \quad (2, 2)$$

Name _____

PRACTICE
Quiz, Algebra 2, 10.6-7

Solve the equation by the addition method, the substitution method, or by graphing (yeah, right). (2 points each)

1. $x^2 + y^2 = 25$
 $y - x = 1$

2. $y^2 - x^2 = 9$
 $2x - 3 = y$

3. $y^2 = x + 3$
 $2y = x + 4$



4. $x^2 + 4y^2 = 25$
 $x + 2y = 7$



5. $2y^2 + xy = 5$
 $4y + x = 7$



6. $x^2 + y^2 = 8$
 $x^2 - y^2 = 0$



7. $2x^2 + 5y^2 = 22$
 $3x^2 - y^2 = -1$



8. $x^2 - y^2 = 16$
 $x + y^2 = 4$



9. $x^2 + y^2 = 16$
 $y^2 - 2x^2 = 10$



10. $x^2 + y^2 = 5$
 $xy = 2$



Name _____

Quiz, Algebra 2, 10.6-7

Solve the equation by the addition method, the substitution method, or by graphing (yeah, right). (2 points each)

1. $x^2 + y^2 = 45$
 $y - x = 3$

2. $y^2 - x^2 = 24$
 $2x + 3 = y$

3. $y^2 = x + 3y$
 $2y = x - 14$

4. $x^2 - 8y^2 = 49$
 $x + 3y = 15$

5. $2y^2 + 2xy = 12$
 $5y + x = 10$

6. $x^2 + y^2 = 35$
 $x^2 - y^2 = 5$



7. $-12x^2 + 5y^2 = 25$
 $3x^2 - y^2 = -4$



8. $x^2 - y^2 = 18$
 $x + y^2 = 12$



9. $x^2 + y^2 = 10$
 $y^2 - 3x^2 = 10$



10. $x^2 + y^2 = 41$
 $xy = 20$



Name _____

Practice Test, Algebra 2, Chapter 10

Find the distance between the points.

1. (3,2) and (0,2)

2. (0,-3) and (3,-7)

3. (5,6) and (7,8)

Find the midpoint of the segments having the following endpoints.

4. (4,5) and (-6,-7)

5. (-8,9) and (-10,11)

6. (-4,3) and (7,-6)

Find the center and the radius of the circle. Also graph number 7.

7. $(x - 1)^2 + (y - 2)^2 = 9$

center: _____

radius: _____

8. $x^2 + y^2 = 12$

9. $x^2 + y^2 + 6x - 4y - 15 = 0$

Write an equation for a circle with.

10. center (0,0) and radius 2

11. center (-2,3) and radius $\sqrt{6}$

Find the center, vertices, and foci. Also graph.

12. $\frac{x^2}{9} + \frac{y^2}{16} = 1$

center: _____

vertices: _____

foci: _____

$$13. \frac{(x-2)^2}{9} + \frac{(y-3)^2}{4} = 1$$

center: _____

vertices: _____

foci: _____

Put the equation for each ellipse in standard form.

$$14. 9x^2 + 36y^2 = 1$$

$$15. 4x^2 + 9y^2 - 16x + 18y - 11 = 0$$

Find the center, vertices, foci, and asymptotes. Also graph.

$$16. \frac{x^2}{16} - \frac{y^2}{9} = 1$$

center: _____

vertices: _____

foci: _____

asymptotes: _____

$$17. 9y^2 - 4x^2 = 36$$

center: _____

vertices: _____

foci: _____

asymptotes: _____

Put the equation for each hyperbola in standard form.

$$18. 4x^2 - y^2 + 24x + 4y + 28 = 0$$

Find the vertex, focus, and directrix of the parabola. Graph number 19 and 21.

19. $x^2 = 16y$

vertex: _____

focus: _____

directrix: _____

20. $y^2 = -2x$

vertex: _____

focus: _____

directrix: _____

21. $(y - 5)^2 = -12(x + 7)$

vertex: _____

focus: _____

directrix: _____

Put the equation of a parabola in standard form.

22. $x^2 + 6x + 4y + 5 = 0$

23. $y^2 + 6y - 8x - 31 = 0$

Write an equation of a parabola satisfying the given conditions.

24. Focus (0,4) directrix $y = -4$

25. Focus (-5,0), directrix $x = 5$

Solve using the substitution method, the addition method, or by graphing. (2 points each)

26. $y = x^2 - 2x - 1$

$y = x + 3$

27. $y^2 - x^2 = 16$
 $2x - y = 1$

28. $y = x^2$
 $3x = y + 2$

29. $x^2 + y^2 = 32$
 $x^2 - y^2 = 0$

30. $x^2 + y^2 = 17$
 $xy = 4$

31. $x^2 + y^2 = 25$
 $25x^2 + 16y^2 = 400$

Name _____

Test, Algebra 2, Chapter 10

Find the distance between the points.

1. (5,7) and (1,7)

2. (7,-4) and (3,-7)

3. (1,3) and (5,8)

Find the midpoint of the segments having the following endpoints.

4. (4,5) and (-9,-7)

5. (-8,7) and (-6,11)

6. (-3,5) and (3,5)

Find the center and the radius of the circle. Also graph number 7.

7. $(x-5)^2 + (y-2)^2 = 4$

center: _____

radius: _____

8. $x^2 + y^2 = 28$

9. $x^2 + y^2 + 8x - 4y - 15 = 0$

Write an equation for a circle with.

10. center (0,0) and radius 6

11. center (-2,5) and radius $\sqrt{2}$

Find the center, vertices, and foci. Also graph.

12. $\frac{x^2}{25} + \frac{y^2}{16} = 1$

center: _____

vertices: _____

foci: _____

$$13. \frac{(x-2)^2}{9} + \frac{(y-3)^2}{16} = 1$$

center: _____

vertices: _____

foci: _____

Put the equation for each ellipse in standard form.

$$14. 9x^2 + 16y^2 = 1$$

$$15. 4x^2 + 9y^2 - 16x + 18y - 11 = 0$$

Find the center, vertices, foci, and asymptotes. Also graph.

$$16. \frac{x^2}{4} - \frac{y^2}{9} = 1$$

center: _____

vertices: _____

foci: _____

asymptotes: _____

$$17. 25y^2 - 4x^2 = 100$$

center: _____

vertices: _____

foci: _____

asymptotes: _____

Put the equation for each hyperbola in standard form.

$$18. 4x^2 - y^2 + 24x + 4y + 28 = 0$$

Find the vertex, focus, and directrix of the parabola. Graph number 19 and 21.

19. $x^2 = 12y$

vertex: _____
focus: _____
directrix: _____

20. $y^2 = -6x$

vertex: _____
focus: _____
directrix: _____

21. $(y+3)^2 = -8(x-4)$

vertex: _____
focus: _____
directrix: _____

Put the equation of a parabola in standard form.

22. $x^2 + 8x + 2y + 6 = 0$

23. $y^2 + 4y - 5x - 20 = 0$

Write an equation of a parabola satisfying the given conditions.

24. Focus (0,3) directrix $y = -3$

25. Focus (-7,0), directrix $x = 7$

Solve using the substitution method, the addition method, or by graphing. (2 points each)

26. $y = x^2 - 2x - 1$
 $y = 2x + 11$

27. $y^2 - x^2 = 16$
 $2x - y = 1$



28. $y = x^2$
 $6x = y + 8$



29. $x^2 + y^2 = 40$
 $x^2 - y^2 = 0$



30. $x^2 + y^2 = 40$
 $xy = 12$



31. $x^2 + y^2 = 12$
 $3x^2 + 4y^2 = 45$



7

12

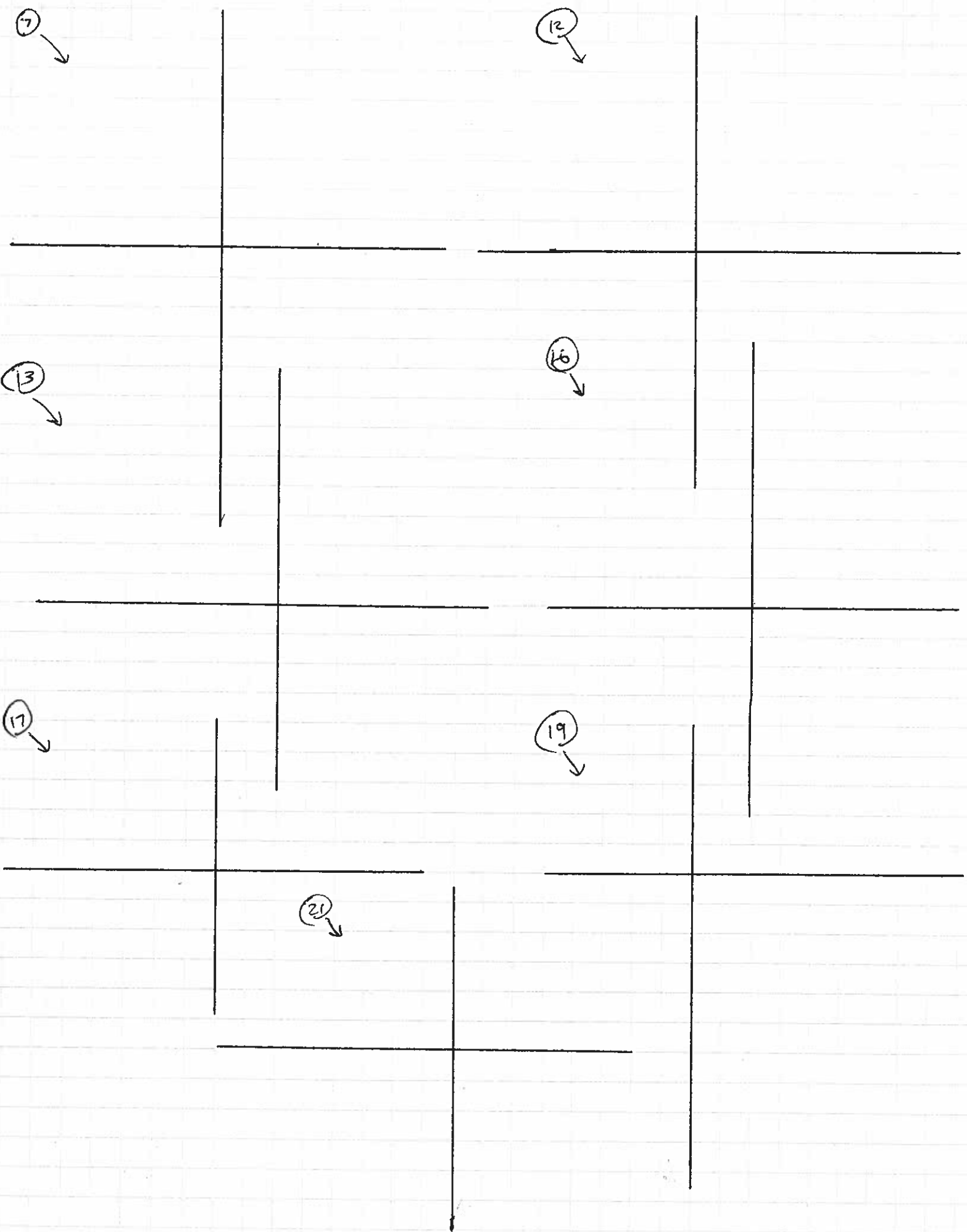
13

16

17

19

21



A NUMBER IS A ROOT OF A
POLYNOMIAL IF IT MAKES IT 0

$$x^2 - 4x - 21$$

15 ? A ROOT ? YES

3

NO

-3

YES

$$x^2 - 4x + 11$$

21√3 ? YES

$$x^2 - 6x + 13$$

3+2i ? YES

A POLYNOMIAL IS A FACTOR OF ANOTHER IF
IT DIVIDES WITH A REMAINDER OF 0

IS $x+2$ A FACTOR OF $x^3 + 9x^2 + 20x + 25$?

NO

$$x-3 \overline{) x^3 + 2x^2 - 5x - 6}$$

467:1-14

USE SIMULT TO REPLACE 3c/3d/4c/4d

NAME _____

ALGEBRA 2

PG 467

REPLACEMENT
PROBLEMS

3c. IS $2 + \sqrt{2}$ A ROOT OF $x^2 - 4x + 2$?

3d. IS $3 + \sqrt{2}$ A ROOT OF $x^2 - 6x + 2$?

4c. IS $3 + i$ A ROOT OF $x^2 - 6x + 5$?

4d. IS $2 + i$ A ROOT OF $x^2 - 4x + 5$?

467:1-14

THE POINT OF CH 11 : FACTORING POLYNOMIALS OF DEGREE
3 AND HIGHER TO SOLVE EQUATIONS

FACTORS + ROOTS ARE LINKED

$x-3$ A FACTOR \leftrightarrow 3 A ROOT

$x+2$ A FACTOR \leftrightarrow -2 A ROOT

REMAINDER WHEN YOU DIVIDE = VALUE WHEN YOU PLUG IN
REMAINDER WHEN DIVIDING BY $x-7$ = # RESULTING FROM
PLUGGING IN 7

x^3 EQ CAN HAVE AT MOST 3 ROOTS

x^4

4

MAX # OF ROOTS = DEGREE OF POLYNOMIAL

INSTEAD OF $x-2$ $\overline{4x^3 - 3x^2 + x + 7}$

DO SYNTHETIC DIVISION

$$\begin{array}{r|rrrr} 2 & 4 & -3 & 1 & 7 \\ & & 8 & 10 & 22 \\ \hline & 4 & 5 & 11 & 29 \end{array} \quad 4x^2 + 5x + 11 \quad R \quad 29$$

ANSWERS THE QUESTIONS: IS $x-2$ A FACTOR

IS 2 A ROOT

$P(2)$

$$x+3 \quad \overline{2x^3 + 7x^2 - 5}$$

LEAVE 0'S
(IN "GAPS")

$$\begin{array}{r|rrrr} -3 & 2 & 7 & 0 & -5 \\ & & -6 & -3 & 9 \\ \hline & 2 & 1 & -3 & 4 \end{array} \quad 2x^2 + x - 3 \quad R \quad 4$$

$$x^5 - 2x^4 - 7x^3 + x^2 + 20 \quad p(10)$$

$$10 \mid 1 \quad -2 \quad -7 \quad 1 \quad 0 \quad 20$$

73120

$$x^3 + 6x^2 - x - 30 \quad \text{IS } 2 \text{ A ROOT?} \quad \text{IS } 5? \quad -3?$$

(YES)
(NO)
(YES)

$$x^3 + 4x^2 + x - 6 \quad \text{IS } x-1 \text{ A ROOT?} \quad \text{(YES)}$$

FACTOR COMPLETELY AND SOLVE

1 IS A ROOT
IF # IS AOA
UP TO = 0

$$\begin{array}{r|rrrr} 1 & 1 & 4 & 1 & -6 \\ & & & 1 & 5 & 6 \\ \hline & 1 & 5 & 6 & 0 & \end{array}$$

(-1, -2, -3)

QUADRATIC IN
YOU CAN
FACTOR

(x+2)(x+3)

$$x^3 + 2x^2 - 5x - 6 \quad \text{SOLVE} \quad \text{(GUESS 1ST ROOT)}$$

IT'S ALL ALIKE
AND WELL IN
CHAPTER 11

$$\begin{array}{r|rrrr} -1 & 1 & 2 & -5 & -6 \\ & & -1 & -1 & 6 \\ \hline & 1 & 1 & -6 & 0 & \end{array}$$

(-1, -3, 2)

(x+3)(x-2)

$$x^4 + 10x^3 + 35x^2 + 50x + 24 \quad \text{(GUESS 1ST 2)}$$

GUESS ONLY
NEEDS TO BE
ALL POSITIVE #'S

$$\begin{array}{r|rrrrr} -1 & 1 & 10 & 35 & 50 & 24 \\ & & -1 & -5 & -26 & -24 \\ \hline & 1 & 9 & 20 & 24 & 0 \\ -2 & & & -2 & -14 & -24 \\ \hline & 1 & 7 & 12 & 0 & \end{array}$$

(-1, -2, -3, -4)

MAKE 2ND
GUESS 1-TO
NEW ONE

(x+4)(x+3)

$$473 = 1-39 \text{ (SKIP } x^3)$$

Name _____

Chapter 1

1. Evaluate the expression $7x + 6y - 5z$ when $x = 7$, $y = 11$, and $z = 9$.

2. What is $|-15 + 12 - 6|$

3. $-16 + (-14) =$ (no calculator allowed)

4. $-22 - 4 =$ (no calculator allowed)

5. $\frac{2}{3} \cdot \left(-\frac{6}{11}\right) =$ (no calculator allowed)

6. $-28 \div -7 =$ (no calculator allowed)

Multiply or divide and simplify.

7. $x^5 \cdot x^{-3}$

8. $\frac{18x^4y^{-1}}{6x^{-3}y^6}$

Simplify.

9. $(x^5)^3$

Convert to scientific notation.

10. 234 000 000

Convert to decimal notation.

11. 5.432×10^{-3}

Multiply or divide in scientific notation

12. $\frac{8 \times 10^6}{2 \times 10^3}$

13. $(5 \times 10^{-7})(6 \times 10^4)$

Chapter 2

Solve.

14. $x - 7 = 17$

15. $9x - 8 = 46$

16. $\frac{1}{2}x + \frac{3}{4} = \frac{5}{4}$

Write an equation and then solve the problem.

17. Find three consecutive odd integers such that the sum of the two times the first, three times the second, and four times the third is 103.

Solve the formula.

18. $A = lw$, for l

19. $A = \frac{1}{2}h(a + b)$, for b

Graph the inequality.

20. $x \leq 3$

Solve the inequality.

21. $x + 6 < 7$

22. $2x - 5 > 4x - 13$

Set up an equation for the word problem and then solve it.

23. On four tests, you score 92, 85, 96, and 88. To get an A, you need a total of 450 points on five tests. What scores on the last test will give you an A?

Graph the compound inequality.

24. $-5 < x \leq 2$

Solve the compound inequality.

25. $-2 < 5x + 8 < 28$

Solve.

26. $|x| = 3$

27. $|x + 2| > 8$

28. $|3x + 3| < 15$

Chapter 3

Put all equations of lines in slope-intercept form.

29. Plot the following points on graph paper: $\{(2, 1), (-3, 1), (-4, -1), (5, -1)\}$.

30. Is $(3,4)$ a solution of $y = 4x - 5$?

31. Graph the equation $y = 3x - 4$ on graph paper.

32. Is this a function?



33. $f(x) = 2x - 5$. What are $f(-1)$, $f(0)$, and $f(1)$?

34. What are the intercepts of the equation $2x + 12 = 4y$?

35. Find the slope of the line containing the points $(3,1)$ and $(-2,4)$.

36. What is the slope of the line $y = 2$?

37. What is the slope of the line $x = -1$?

38. Find the equation of the line through $(4,3)$ with slope 3.

39. Find the equation of a line through $(4,5)$ and $(6,9)$.

40. Find the slope and y-intercept of the line $y = -2x + 6$

41. Write an equation of a line with slope 2 and y-intercept $(0,-3)$

42. Are the lines $y = -2x + 5$ and $y = -3x + 5$ parallel?

43. Write an equation of a line parallel to $2x + y = 12$ through $(1,2)$

44. Are the lines $5x + 7y = 9$ and $7x - 5y = 6$ perpendicular?

45. Write an equation of a line perpendicular to $12x + 3y = 9$ through $(-3,1)$

Chapter 4

Solve each system of equations graphically. Use graph paper and use each space as one unit.

46. $5x + 3y = 20$

$4x + 2y = 16$

Solve each system of equations using the substitution method.

47. $5x + 6y = -17$

$x + 5y = -11$

Solve each system of equations using the addition method.

48. $2x + 3y = 7$

$3x - 4y = 2$

49. One day, the office sold 100 pens and pencils, pens at 25 cents, and pencils at 15 cents. In all \$20.00 was made. How many of each were sold.

system: _____

solution: _____

Solve the system of equations.

50. $2x + 3y + 4z = 20$

$4y + 5z = 23$

$2z = 6$

51. $x + y + z = 12$

$x + y = 9$

$y + z = 7$

Write a system of equations and solve the system.

52. On the Cheswick Charger basketball team there are three players who can score, Andy, Breyon, and Crey. When all three play, they score 60 points. When Andy and Breyon play, they score 40 points. When Breyon and Crey play, they score 30. How many points can be scored by each player individually?

System: _____

Solution: _____

Graph the inequalities on graph paper. Use each space as 1 unit.

53. $y < -2$

54. $y \geq 2x - 4$

55. $y < x$

$y > -x + 2$

Name _____

Chapter 5

Add

1. $5x^2 - 6xy^2 - 7xy + 8y - 9$ and $-9x^2 - 8xy^2 + 7xy + 6y - 5$

Subtract.

2. $(6x^2 + 7xy^2 - 8xy - 9y + 10) - (-2x^2 + 3xy^2 - 4xy + 5y - 6)$

Multiply.

3. $(3x + 4y + 5)(3x + 5y + 7)$

4. $(2x + 5)(5x + 6)$

5. $(x + 2)^2$

6. $(2x + 5)(2x - 5)$

Factor.

7. $x^2 + 10x + 25$

8. $x^2 - 25$

9. $20xz - 40yz$

10. $3x^2 + 17x + 10$

11. $qx + qy - rx - ry$

Factor completely.

12. $y^6 - 1$

13. $y^4 - 81$

Solve each problem by writing and solving an equation.

14. Four times the square of a number is twenty-one more than eight times the number. What is the number?

15. A flower bed is 5 meters longer than it is wide. The flower bed will have an area of 300 square meters. What are the length and width of the flower bed?

Chapter 6

Multiply and simplify.

16. $\frac{x^2 - 16}{x^2} \cdot \frac{x^2 - 5x}{x^2 + x - 12}$

Divide and simplify.

17. $\frac{x^2 - 25}{x + 2} \div \frac{x + 5}{x + 2}$

Find the LCM of

18. 6 and 8

19. $4x^4y^3$ and $5x^3y^3$

Add or subtract

20. $\frac{3 + 2x}{x} + \frac{2x}{x}$

21. $\frac{x - 3}{x + 2} + \frac{x + 4}{x - 3}$

Simplify.

22. $\frac{\frac{1}{x} + 3}{\frac{1}{x} - 4}$

$$23. \frac{\frac{y^2 - y - 6}{y^2 - 5y - 14}}{\frac{y^2 + 3y + 2}{y^2 - 6y - 7}}$$

Divide.

$$24. \frac{20x^8 - 28x^6 + 32x^4}{2x^2}$$

Solve.

$$25. \frac{1}{8} - \frac{5}{12} = \frac{1}{x}$$

$$26. y - \frac{6}{y} = 1$$

Solve the problem.

27. Crey can complete a job in 4 hours. Emily can do the same job in 2 hours. How long will it take them to do the job working together?

28. One car travels 10 km/h faster than another. One travels 490 km in the time that the other travels 420. How fast are the two cars going?

Solve the formula for the given letter.

29. $\frac{W_1}{W_2} = \frac{d_1}{d_2}; d_2$

30. $\frac{1}{p} + \frac{1}{q} = \frac{1}{f}; p$

Chapter 7

31. What are the square roots of 25?

Multiply and simplify.

32. $\sqrt{2}\sqrt{10}$

Divide and simplify.

33. $\sqrt{\frac{25}{16}}$

Add or subtract.

34. $7\sqrt{2} - 5\sqrt{2}$

Multiply.

35. $(\sqrt{3} - 5\sqrt{5})(4\sqrt{3} + \sqrt{5})$

Rewrite without fractional exponents.

36. $x^{\frac{5}{6}}$

Rewrite with fractional exponents.

37. $\sqrt[3]{x^2}$

Rewrite with positive exponents.

38. $x^{-\frac{2}{5}}$

Use the properties of exponents to simplify.

39. $2^{\frac{1}{2}} \cdot 2^{\frac{1}{3}}$

40. $(x^{\frac{2}{3}})^{\frac{3}{5}}$

Write a single radical expression.

41. $\frac{\sqrt[3]{x^2}}{\sqrt{x}}$

Solve the radical equation.

42. $\sqrt{x+3} = 5$

43. $\sqrt{x-9} + \sqrt{x} = 9$

Express in terms of i .

44. $\sqrt{-16}$

Multiply.

45. $4i \cdot 3i$

46. $(2+5i)(2-5i)$

Find the conjugate.

47. $2-3i$

Find the reciprocal.

48. $1+2i$

Divide.

49. $\frac{2+3i}{4-2i}$

Our favorite problem of the year: If z is a complex number, find a polynomial in \bar{z} that is the conjugate.

50. $z^2 - 2z - 3$

Chapter 8

51. State the Quadratic Formula.

Solve by any method you choose.

52. $x^2 + 5x + 4 = 0$

53. $x^2 - 5x = 0$

54. $x^2 + 4 = 0$

55. $x^2 - 6x + 2 = 0$

56. $x^2 - 3x - 5 = 0$

57. $x^2 + 12x + 36 = 0$

58. $x^2 - 9 = 0$

Solve by substituting.

59. $x^4 - 6x^2 + 9 = 0$

60. $x - 4\sqrt{x} - 12 = 0$

Chapter 9

Is the figure symmetric to the given line and to the given point? Answer yes or no.

1.



Test for symmetry to the x-axis and the y-axis. Answer yes or no.

2. $3x + 4y^2 = 6$

Test for symmetry with respect to the origin. Answer yes or no.

3. $3x = 5y$

Determine whether each function is even, odd, or neither.

4. $f(x) = x^5 + x^8$

5. $f(x) = x^6 + x^4$

Tell how the graph of $f(x)$ would be transformed.

6. $-2 + f(x)$

7. $5f(x)$

8. $f(-2x)$

9. $5f(x - 4)$

Graph on graph paper.

10. $y = |x - 3|$

11. $y = 2 + \frac{1}{2}|x|$

12. $y = -2x^2$

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

14. $y = 2 + (x + 2)^2$

Find the vertex, line of symmetry, and the max or min.

15. $f(x) = (x + 1)^2 + 2$

Complete the square to get an equation in the form $f(x) = a(x - h)^2 + k$.

16. $f(x) = x^2 + 6x + 8$

Find the x-intercepts.

17. $f(x) = x^2 - 7x + 6$

18. $f(x) = x^2 + 5x + 3$

Chapter 10

Find the distance between the points.

19. (3,2) and (0,1)

Find the midpoint of the segments having the following endpoints.

20. (4,5) and (-8,-6)

Find the center and the radius of the circle.

21. $x^2 + y^2 = 5$

22. $x^2 + y^2 + 6x - 4y - 15 = 0$

Write an equation for a circle with.

23. center $(-4,3)$ and radius 2

Find the center, vertices, and foci.

24. $\frac{x^2}{4} + \frac{y^2}{16} = 1$

center: _____

vertices: _____

foci: _____

Put the equation for each ellipse in standard form.

25. $4x^2 + 9y^2 - 16x + 18y - 11 = 0$

Graph an ellipse with

26. center $(4,1)$

vertices $(6,1)$, $(2,1)$, $(4,2)$, and $(4,0)$

foci $(4+\sqrt{3}, 1)$ and $(4-\sqrt{3}, 1)$

GRAPH
#24

Find the center, vertices, foci, and asymptotes.

27. $9y^2 - x^2 = 36$

center: _____

vertices: _____

foci: _____

asymptotes: _____

Put the equation for each hyperbola in standard form.

28. $4x^2 - y^2 + 24x + 4y + 28 = 0$

Graph the hyperbola

29. number 27

Find the vertex, focus, and directrix of the parabola.

30. $(y - 3)^2 = -16(x + 1)$

vertex: _____

focus: _____

directrix: _____

Put the equation of a parabola in standard form.

31. $x^2 + 6x + 4y + 5 = 0$

Write an equation of a parabola satisfying the given conditions.

32. Focus (0,3) directrix $y = -3$

Graph a parabola with

33. vertex (0,0) focus (0,2) directrix $y = -2$

34. vertex (-4,-3) focus (-2,-3) directrix $x = -6$

Solve using the substitution method, the addition method, or by graphing.

35. $y = x^2$
 $4x = y + 3$

36. $x^2 + y^2 = 18$
 $x^2 - y^2 = 0$

37. $x^2 + y^2 = 26$
 $xy = 5$

Chapter 11

Is the number a root?

38. -1, of $x^3 - 6x^2 + 11x - 6$

Is the polynomial a factor?

39. $x + 1$, of $x^3 - 6x^2 + 11x - 6$

40. $x - 2$, of $x^3 + 6x^2 + 11x + 6$

Divide. Find the quotient and the remainder.

41. $x - 2$ into $x^3 + 8x^2 - 9x - 5$

42. $x - 2$ into $2x^3 + 5x^2 - 4$

Use synthetic division to find the function values of $P(x) = x^3 + 2x^2 - 3x + 4$.

43. $P(1)$

Factor the polynomial to solve the equation $P(x) = 0$.

44. $x^3 + 2x^2 - 13x + 10$

45. $x^4 + 11x^3 + 41x^2 + 61x + 30$

Find the roots of each polynomial and state the multiplicity of each.

46. $(x + 3)^4 (x - 5)^6$

Find a polynomial of degree 3 with the given roots. Do not multiply out.

47. 3, 4i, -4i

Suppose a polynomial of degree 6 with rational coefficients has the given roots. Find the other roots.

48. 1, -4, 5i, $4 - \sqrt{3}$

Find a polynomial of lowest degree that has the given numbers as some of its roots. Do not multiply out.

49. $2, 7, 6 - \sqrt{5}$

Given that the polynomial has the given root, find the other roots.

50. $x^4 + x^3 - x^2 + x - 2$; $-i$ is a root

51. $x^3 + 64$; $\sqrt[3]{-4}$ is a root

List all of the possible rational roots.

52. $7x^4 - 5x^3 + 7x^2 - 5x + 4$

Find the rational roots, if they exist, of each polynomial. If possible, find the other roots.

53. $x^3 - x^2 - 4x + 4$

54. $x^4 - 3x^3 - 20x^2 - 24x - 8$

Find only the rational roots.

55. $x^5 - 3x^4 - 3x^3 + 9x^2 - 4x + 12$
