Advanced Algebra
Chapters 1 – 3 Review

Name Answers
Period

Chapter 1
For problems 3 – 4, solve. Graph your solution on the number line.

3. $3|2x+6|-9<15$

$+9 \quad +9$

$\frac{3|2x+6|}{3} < \frac{24}{3}$

$|2x+6| < 8$

$2x+6 < 8$ and $2x+6 > -8$

$-6 \quad -6$ $\quad$ $-6 \quad -6$

$\frac{2x}{2} < \frac{2}{2}$ $\quad$ $\frac{2x}{2} > \frac{-14}{2}$

$x < 1$ and $x > -7$

3. $x < 1$ and $x > -7$

4. $3x-7(2x-13)=3(-2x+9)$

$3x - 14x + 91 = -6x + 27$

$-11x + 91 = -6x + 27$

$+11x \quad +11x$

$91 = 5x + 27$

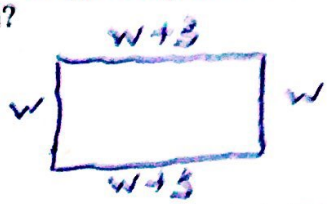
$-27 \quad -27$

$\frac{5x}{5} = \frac{64}{5}$

$x = 12.8$

4. $x = 12.8$

5. The length of a picture frame is 3 more than the width. The perimeter is 52 in. What is the length and the width?



$4w + 6 = 52$

$-6 \quad -6$

$\frac{4w}{4} = \frac{46}{4}$

$w = 11.5$ in
$\ell = 14.5$ in

6. The cost of a field trip is \$220 plus \$7 per student. If the school can spend at most \$500 write an inequality to determine how many students can go?

$220 + 7x \leq 500$

$-220 \quad -220$

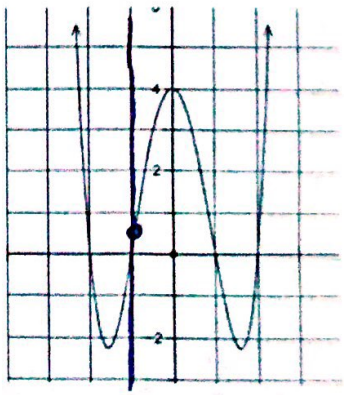
$\frac{7x}{7} \leq \frac{280}{7}$

$x \leq 40$ students

7. What is the definition of a function?

each input (x) has exactly one output

b.) Is the graph at the right a function? Explain:



yes, vertical line passes through graph at only one point

8. If $f(x)=2x+5$ and $g(x)=-\frac{1}{2}x+2$, find $f(5)+g(-6)$.

$2(5)+5 = 15$

$-\frac{1}{2}(-6)+2 = 5$

$15+5 = 20$

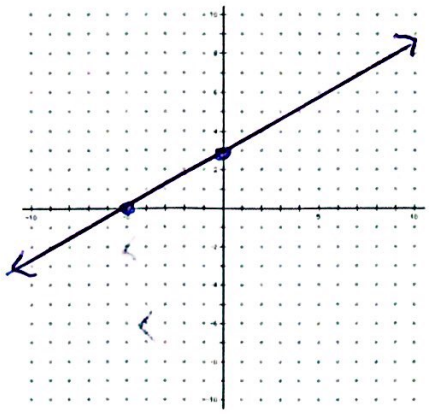
Chapter 2

9. Graph: $-3x+5y=15$. Find the slope, x-intercept, and y-intercept.

Slope: 3/5

x-intercept: −5

y-intercept: 3



For problem 10, given the following information, write the equation of the line in point–slope form, slope-intercept form, and standard form.

m = 3

10. Perpendicular to $y=\frac{-1}{3}x-5$ and through (-5, 3)

* oppasite reciprocal slope

Point-Slope $y-3=3(x+5)$

Slope-Intercept $y=3x+18$

Standard Form $-3x+y=18$

11. A plumber charges $175 to come out to your house and work for 2 hours. She charges $575 for 10 hours.

a) Write an equation to model the plumber's fee for h hours. b) What is the plumbers fee after 7 hours?

(2, 175) (10, 575)

$\frac{575-175}{10-2}=\frac{400}{8}=50$

a) $y-175=50(x-2)$

b) $y-175=50(7-2)$

$y-175=50(5)$

$y-175=250$

$+175 \quad +175$

$y=425$

For problems 12 – 13, graph.

"V"

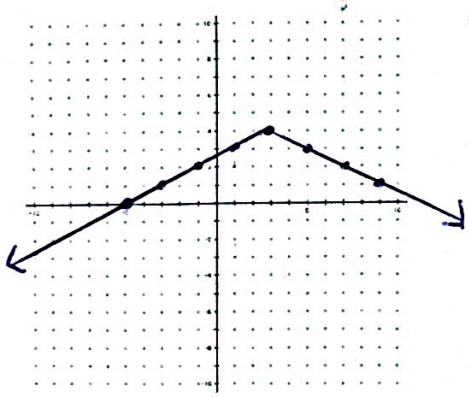
right 3

up 4

open down

slope $\pm\frac{1}{2}$

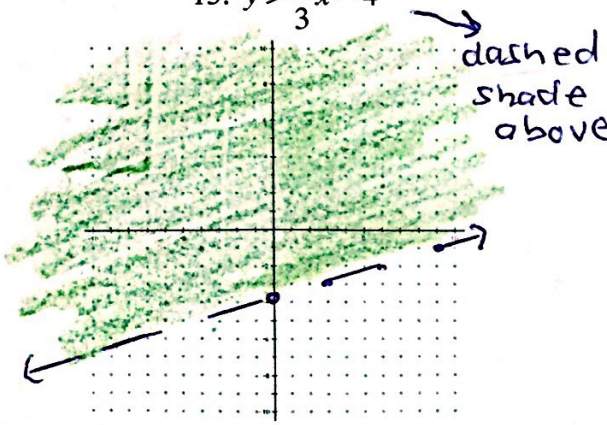
12. $y=-\frac{1}{2}|x-3|+4$



13. $y>\frac{1}{3}x-4$

dashed

shade above



Chapter 3

For problems 14 – 15, solve the system of equations by the method of your choice.

14. $\begin{cases} y = x - 2 \\ y = -2x + 7 \end{cases}$

$y = 3 - 2$

$y = 1$

$x - 2 = -2x + 7$

$+2x \quad +2x$

$3x - 2 = 7$

$+2 \quad +2$

$\frac{3x}{3} = \frac{9}{3}$

$x = 3$

$(3, 1)$

15. $\begin{cases} 4x + 3y = 4 \\ 2x - y = 7 \end{cases}$ $\times 3$

$6x - 3y = 21$

$4x + 3y = 4$

$\frac{10x}{10} = \frac{25}{10}$

$x = 2.5$

$4(2.5) + 3y = 4$

$10 + 3y = 4$

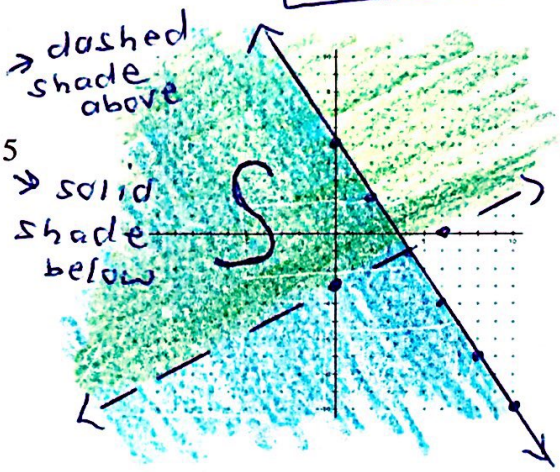
$-10 \quad -10$

$\frac{3y}{3} = \frac{-6}{3}$

$y = -2$

$(2.5, -2)$

16. Graph the system of inequalities: $\begin{cases} x - 2y < 6 \\ y \le -\frac{3}{2}x + 5 \end{cases}$



17. The Village Inn offers two special packages. For 2 nights and 3 meals, the cost is \$158. For 2 nights and 5 meals the cost is \$181. Write and solve a system of linear equations to find the costs per night and per meal.

Equation 1: $2n + 3m = 158$

Equation 2: $2n + 5m = 181$

Cost per night \$61.75

Cost per meal \$11.50

$2n + 3m = 158$

$-1(2n + 5m = 181)$

$-2n - 5m = -181$

$2n + 3m = 158$

$\frac{-2m}{-2} = \frac{-23}{-2}$

$m = 11.50$

$2n + 3(11.50) = 158$

$2n + 34.50 = 158$

$-34.50 \quad -34.50$

$\frac{2n}{2} = \frac{123.50}{2}$

$n = 61.75$

18. Each week you must do a minimum of 10 hours of homework. Basketball practice is at least 12 hours per week. You have no more than 25 hours per week to devote to these activities. Write and graph a system of inequalities.

$h \ge 10$

$p + h \le 25$

$p \ge 12$