Intermediate Algebra **Practice Midterm**
Math 80A (7th ed.) **(Ch. 2-4)**

(2.2)

1. Write as an algebraic expression and simplify completely.

   a) The perimeter of a rectangle with length $7x$ and width $2x-8$.

   b) The perimeter of a triangle with sides of length x, $x-10$, and $12x+8$.

(2.1)

Solve the following equations.

2. $-4x-1+5x=9x+3-7x$

3. $5(x-4)+x=6(x-2)-8$

4. $\frac{3x}{8}-1=3+\frac{x}{6}$

5. $\frac{2}{5}=\frac{5}{6}-\frac{x}{2}$

(2.6)

6. $|2x-8|=|5x+5|$

(2.3)

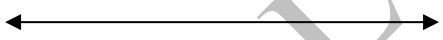
7. Solve for the specified variable.

   a) $I=prt+p$ for r b) $7x+5y=10$; *for* y c) $E=I(R+r)$; *for* r

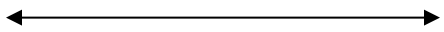
(2.5)

8. Solve the following compound inequality and graph the solution set.

   a) $7x\geq 21$ or $-2x>-14$

   b) $7x\geq 21$ and $-2x>-14$

   c) $x>-5$ or $x>0$

   d) $x>-5$ and $x>0$

(2.4/2.5)

9. Solve each of the following inequalities. Write your answer in *interval notation*.

   a) $-24\leq 3(x+2)$ b) $-3<5-x<9$

(2.7)

10. Solve the following inequalities. Write your answer in *interval notation*.

    a) $|x-6|+4\leq 9$ b) $|x-6|+4>9$

    c) $|x-6|+4<3$ d) $|x-6|+4\geq 3$

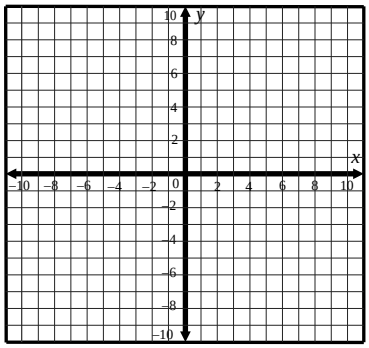
(3.3)

11. Find the intercepts and graph the following equations.

a) $5x+3y=15$

x-intercept _____

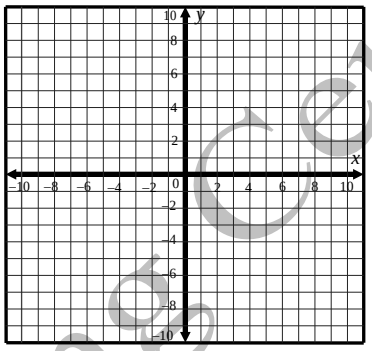
y-intercept _____



b) $4x-2y=8$

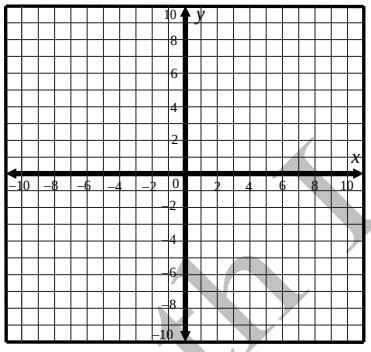
x-intercept _____

y-intercept _____



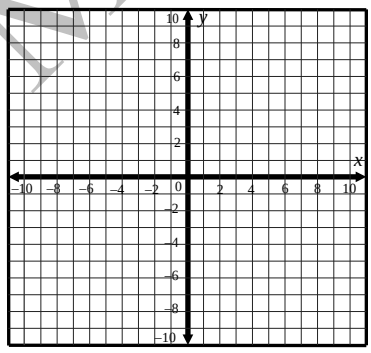
(3.5)

12. Graph $f(x)=-\frac{5}{2}x+4$ using the given slope and *y*-intercept.



(3.5)

13. Graph $-3x+2y=12$ using the slope and *y*-intercept.



(3.5)

14. Find the equation of the line satisfying the given conditions.
Write your answer in the form: $y = mx + b$

a) Parallel to $2x + 5y = 10$; through (-5,-2). b) Perpendicular to $2x + 5y = 10$; through (-5,-2).

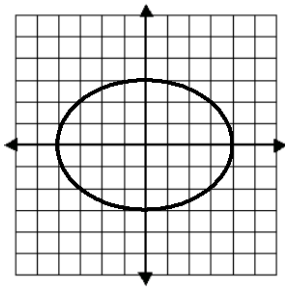
15. Find the equation of the line that passes through (-2,-3) and (-5,3).
Write your answer in the form: $y = mx + b$

(3.2)

16. Evaluate the following using the given function: $f(x) = -3x^2 + 4x - 6$

a) $f(0)$ b) $f(-7)$ c) $f(5)$

17. Determine whether the graph is the graph of a function and state the domain and range.*



Domain _____

Range _____

Function? _____

***You will need to practice more problems like this!** Look in your e-text/textbook. See example 6 on pages 136-137 and work problems 29-40 on page 144.

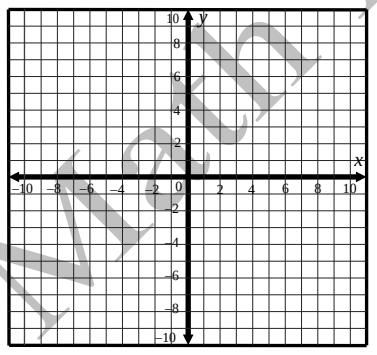
(4.1)

18. Solve the following system of equations graphically. Write the solution on the blank line.

$y = -\frac{3}{2}x + 5$

$2y = x - 14$

_____



(4.1)

19. Use the elimination method to solve the following system of equations.

$3x + 2y = 3$

$6x - 4y = 2$

_____

(4.1)

20. Use the substitution method to solve the following system of equations.

$$x + 4y = 19$$
$$3x + 2y = 17$$

(4.2)

21. Solve the following system of equations.

$$\begin{aligned} x + 8y &= 42 \\ 2x + 9z &= 58 \\ -16y + 3z &= -62 \end{aligned}$$

(4.2)

22. Use a system of equations to solve the following problems.

a) One number is two less than a second number. Twice the first is 4 more than 3 times the second. Find the numbers.

b) The measure of the largest angle of a triangle is 40° more than the measure of the smallest angle, and the measure of the remaining angle is 20° more than the measure of the smallest angle. Find the measure of each angle.

Answers:

1. a) $18x - 16$
   b) $14x - 2$

2. $x = -4$

3. *all real numbers*

4. $x = \frac{96}{5}$ *or* $19\frac{1}{5}$

5. $x = \frac{13}{15}$

6. $\left\{-\frac{13}{3}, \frac{3}{7}\right\}$

7. a) $r = \frac{I - p}{pt}$ b) $y = \frac{10 - 7x}{5}$ *or* $y = -\frac{7}{5}x + 2$ c) $r = \frac{E - IR}{I}$ *or* $r = \frac{E}{I} - R$

8. a) $(-\infty, \infty)$

b) $[3, 7)$

c) $(-5, \infty)$

d) $[0, \infty)$

9. a) $[-10, \infty)$

b) $(-4, 8)$

10. a) $[1, 11]$

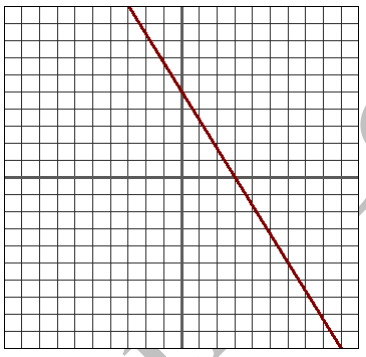
b) $(-\infty, 1) \cup (11, \infty)$

c) $\varnothing$

d) $(-\infty, \infty)$

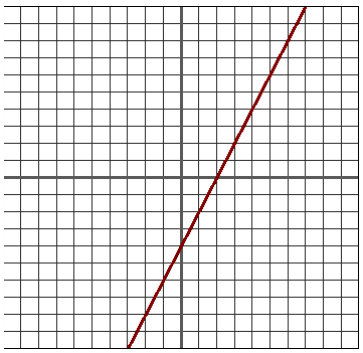
11. a) *x*-intercept: $(3, 0)$

y-intercept: $(0, 5)$

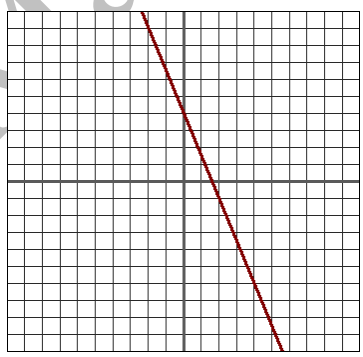


b) *x*-intercept: $(2, 0)$

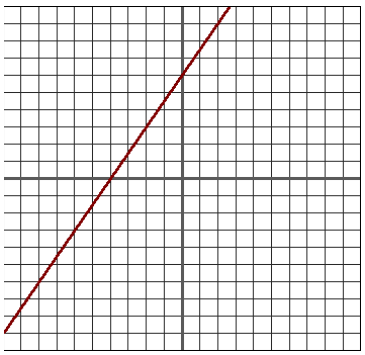
y-intercept: $(0, -4)$



12.



13.



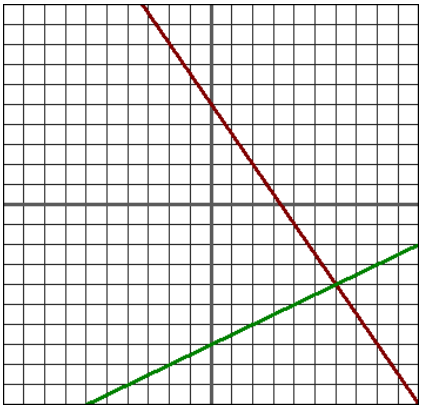
14. a) $y = -\frac{2}{5}x - 4$ b) $y = \frac{5}{2}x + \frac{21}{2}$

15. $y = -2x - 7$

16. a) $f(0) = -6$ b) $f(-7) = -181$ c) $f(5) = -61$

17. Domain: $[-4, 4]$ Range: $[-3, 3]$ Function?: ***no***

*Don't forget to practice more problems like these in your e-text/textbook!

18.  Solution: $(6, -4)$

19. $\left(\frac{2}{3}, \frac{1}{2}\right)$

20. $(3, 4)$

21. $(2, 5, 6)$

22. a) -8 *and* -10

b) $40^\circ, 60^\circ,$ *and* 80°