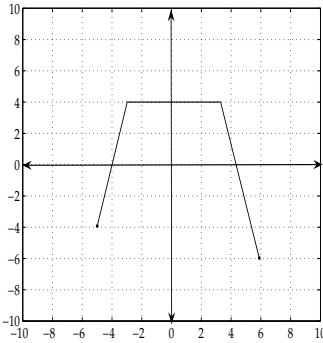


## EXAM 1 REVIEW – MATH 002

The following is a review of the concepts you should know for this exam. This review is a sample and is not intended to mirror the test questions. In addition, any problems similar to those discussed in class or in assigned homework sets may be assessed on the exam.

1. Solve:  $4(y + 3) - y = 3(2y - 3) - 7y + 1$ .
2. Solve:  $\frac{(m + 1)}{6} - \frac{(3 - m)}{4} = \frac{m}{3}$ .
3. Solve  $R = \frac{r_1 + r_2}{2}$ , for  $r_2$
4. Find the amount of money in an account after 12 years if a principal of \$1800 was invested at 4.4% interest compounded quarterly. (Round to the nearest cent.)
5. Given:  $6x - 2y = 7$ 
  - (a) Write the equation using function notation
  - (b) Find the slope and the  $y$ -intercept
  - (c) Make a sketch of the graph
6. Find the slope of the line:
  - (a) that passes through  $(-3, 1)$  and  $(2, -6)$
  - (b) given by  $x + 6 = 0$
  - (c) given by  $2y = 5$
7. Algebraically, find the  $x$ - and  $y$ -intercepts of the line given by  $4x + 3y = 12$
8. Find an equation of each line satisfying the condition(s) given.
  - (a) Horizontal, through  $(5, 1)$ .
  - (b) Through  $(1, 3)$  with a slope  $= -7$ .
  - (c) Parallel to  $x + 4y = 2$  through  $(-1, 3)$ .
  - (d) Perpendicular to  $3x - 2y = -1$ , through  $(2, -7)$
  - (e) Through  $(-4, 3)$  with undefined slope.

9. For the graph given by the function  $f(x)$  shown



- (a) What is the domain?
- (b) What is the range?
- (c)  $f(2.5) = ?$

10. In 1998, the number of people (in millions) reporting arthritis was 43. The number of people (in millions) predicted to be reporting arthritis in 2020 is 60. Write an equation that models the relationship (year, number of people), using 0 to represent 1998. Use this equation to predict the number of people reporting arthritis in 2010.

11. Each of the base angles of an isosceles triangle measures 5 more than twice the third angle. Find the measures of the three angles. Note: The base angles of an isosceles triangle are equal.

12. An art supply store has 67 inches of a discontinued frame model to frame a picture with length one less than twice the width. What are the dimensions of the picture?

13. John used his 15% employee discount to purchase a refrigerator for \$895. To the nearest cent, what was the marked selling price of the refrigerator?

14. Solve graphically:

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

15. Use substitution or elimination to solve the following systems of equations.

$$\begin{array}{ll} \text{a) } \begin{cases} 2x + y = 6 \\ 3x + 4y = 4 \end{cases} & \text{b) } \begin{cases} 5x + 4y = 22 \\ -3x + 8y = 18 \end{cases} & \text{c) } \begin{cases} \frac{x}{2} + \frac{y}{4} = -\frac{3}{4} \\ x + \frac{3}{4}y = -4 \end{cases} & \text{d) } \begin{cases} 7x - 14y = 5 \\ x = 2y \end{cases} \end{array}$$

16. A motel in New Orleans charges \$90 per day for double occupancy and \$80 per day for single occupancy. If 80 rooms are occupied for \$6930, how many rooms of each kind are there?

17. Green Growers garden shop makes their own special blend of mulch at a fixed cost of \$5500 plus \$2.67 per bag. If they can sell the mulch for \$4.99 per bag, how many bags do they need to sell to break even?

18. The slope of the line  $2y = -3x + 5$  is

- a) 3
- b) -3
- c)  $\frac{3}{2}$
- d)  $-\frac{3}{2}$

19. Which of the following is a point on the line  $2x + y = 4$   
a)  $(0, 2)$     b)  $(1, 2)$     c)  $(2, 1)$     d)  $(4, 0)$
20. The lines  $y = 2x + 3$  and  $y = ax + 5$  are perpendicular if  $a =$  .  
a)  $-2$     b)  $\frac{1}{2}$     c)  $-\frac{1}{2}$     d)  $2$
21. For the line  $2x + 3y = 6$ , the x-intercept is  
a)  $(3, 0)$     b)  $(0, 2)$     c)  $(-3, 0)$     d)  $(0, -2)$
22. The linear function  $f(x) = -4x + 3$  has a slope and a y-int of  
a)  $m = 4, y - \text{int}(0, 3)$     b)  $m = -4, y - \text{int}(0, 3)$   
c)  $m = -4, y - \text{int}(0, -3)$     d)  $m = 4, y - \text{int}(0, -3)$
23. If the graphs of a system of two linear equations result in parallel lines, the system is:  
(a) consistent, one solution    (b) consistent, no solution  
(c) inconsistent, one solution    (d) inconsistent, no solution
24. When solving a system of equations by the elimination method, you get a result of  $0 = 0$  after adding the equations. This means the system is:  
(a) consistent, dependent, infinite solutions  
(b) consistent, independent, no solution  
(c) inconsistent, independent, infinite solutions  
(d) inconsistent, dependent, no solution
25. When solving a system of equations by the elimination method, you get a result of  $0 = 5$  after adding the equations. This means the system is:  
(a) consistent, infinite solutions    (b) consistent, no solution  
(c) inconsistent, infinite solutions    (d) inconsistent, no solution

**Answers:**

1.  $y = -5$
2.  $m = 7$
3.  $r_2 = 2R - r_1$
4. \$ 3043.18
5. a)  $f(x) = 3x - \frac{7}{2}$  b)  $m = 3, b = -\frac{7}{2}$  c) check with a grapher
6. a)  $m = -\frac{7}{5}$  b) undefined c)  $m = 0$
7.  $x$ -int:  $(3, 0)$ ;  $y$ -int  $(0, 4)$
8. a)  $y = 1$  b)  $y = -7x + 10$  c)  $y = -\frac{1}{4}x + \frac{11}{4}$  d)  $y = \frac{-2}{3}x - \frac{17}{3}$  e)  $x = -4$
9. a)  $\{x \mid -5 \leq x \leq 6\}$  b)  $\{y \mid -6 \leq y \leq 4\}$  c)  $f(2.5) = 4$
10.  $y = \frac{17}{22}x + 43$  at 52.3 million people
11. base angles =  $73^\circ, 3^{\text{rd}}$ , angle =  $34^\circ$
12. 11.5 inches by 22 inches
13. \$1052.94
14.  $(1, 2)$
15. a)  $(4, -2)$  b)  $(2, 3)$  c)  $\left(\frac{7}{2}, -10\right)$  d)  $\emptyset$ , no solution
16. 53 double rooms and 27 single rooms
17. 2371 (rounded)
18.  $d$
19.  $b$
20.  $c$
21.  $a$
22.  $b$
23.  $d$
24.  $a$
25.  $d$