

MA 108R Intermediate Algebra
Practice Exam 3

1. Find the equations of the lines passing through the point $(2, \frac{-3}{4})$ and
 - i) parallel to the line $2x + 3y - 5 = 0$.
 - ii) perpendicular to the line $2x + 3y - 5 = 0$Write the equations in slope-intercept form.
2. Suppose a \$2500 computer depreciates linearly to \$500 over a 5 year period. (a) Write an equation that describes its value in terms of its age. (b) What is the computer's value after 3 years?
3. Use the substitution method to find solutions to the following systems. Check your answer by graphing the equations (Be sure to label the axes and put number labels on your graphs).

(i)

$$-x + 2y = 0$$

$$x + 4y = 6$$

(ii)

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

$$y = x + 1$$

4. Solve the following word problem by using a system of equations. Be sure to show all work, including defining your variables.
A 45% sulfuric acid solution will be mixed with a 20% sulfuric acid solution. How many milliliters of each must be used to make 150 milliliters of a solution that is 30% sulfuric acid?
5. Solve the following word problem by using a system of equations. Be sure to show all work, including defining your variables.
The sum of two numbers is -8 and their product is -240 . What are the numbers?

6. Let f be the function with domain \mathbb{R} (all real numbers) defined by $f(x) = 2x^2 + x - 5$. Determine each of the following:
- (i) $f(-3)$
 - (ii) $f(a)$
 - (iii) $f(2x - 5)$
7. Find the domain and range of the functions:
- (i) $f(x) = \sqrt{x - 2}$
 - (ii) $g(x) = \frac{1}{5x+3}$
8. Graph the function by plotting the points with x -coordinates $-2, -1, 0, 1, 2$ and determine if it is symmetric about the y -axis or the origin: $f(x) = -x^3$.

Note: Make sure you practice word problems! Do as many as you have time for out of your book. There are many different types of word problems; you should be prepared for them all.