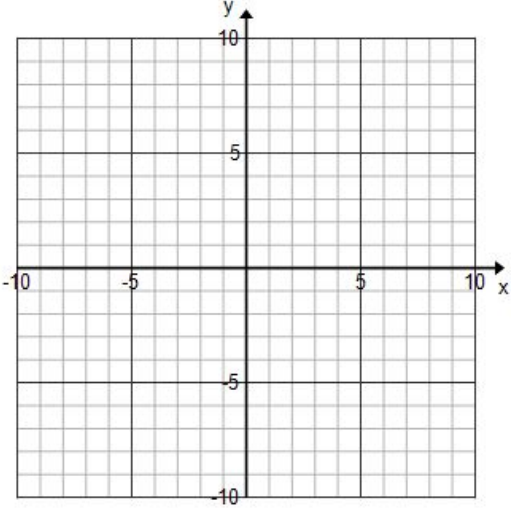


Math 1050 - Solving Systems A5.1	Name
<p>1. Solve by substitution:</p> $2x + y = 7$ $x + 2y = 2$	<p>2. Solve by elimination:</p> $4x - 3y = 11$ $8x + 4y = 12$
<p>3. Solve the system Graphically:</p> $2x - 3y = 12$ $-x + \frac{3}{2}y = 4$ 	<p>4. Solve the system:</p> $3x + 2y = 0$ $-x - 2y = 8$
<p>5. Solve the system:</p> $4x - 3y = 28$ $9x - y = -6$	<p>6. Solve the system:</p> $0.2x - 0.2y = -1.8$ $-0.3x + 0.5y = 3.3$
<p>7. Solve the system:</p> $-3x + 5y = 2$ $9x - 15y = 6$	<p>8. Solve the system:</p> $2x - 3y = -8$ $14x - 21y = 3$

9. Solve the system:

$$\frac{1}{2}x + \frac{3}{5}y = 3$$

$$\frac{5}{3}x + 2y = 10$$

10. A man has 14 coins in his pocket all of which are dimes and quarters. If the total value of his change is \$2.75, how many dimes and how many quarters does he have?

11. A fruit stand sells 2 varieties of strawberries: standard and deluxe. A box of deluxe strawberries sells for \$7, and a box of deluxe sells for \$10. In one day the stand sells 135 boxes of strawberries for a total of \$1110. How many boxes of each type were sold?

12. Pop's Cycle Shop sells bicycles and tricycles. The number of bicycles is 1 less than 4 times the number of tricycles. All the bicycles and tricycles together have a total of 174 wheels. How many bicycles are there?

13. Suppose you have a job delivering packages. Assume that in both jobs you are working an 8 hour shift, and you work 20 days a month. The table below shows how much you currently earn in a month. You discover that a competitor pays employees \$2 per **hour** plus \$.35 per delivery.

CURRENT JOB:

deliveries made	Amount earned
5	\$1020
95	\$1020
170	\$1020
250	\$1020

Equation for your current job:

Equation for the competitor.

14. Using the info at the left, find how many deliveries you would have to make to earn the same as you currently make.

How many deliveries is that a week?

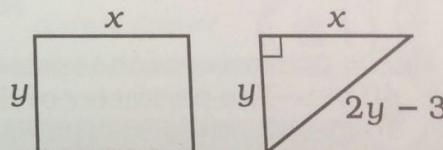
How many deliveries is that a day?

How many deliveries in an hour?

Which job would you choose? WHY? Write AT LEAST 2 FULL SENTENCES!

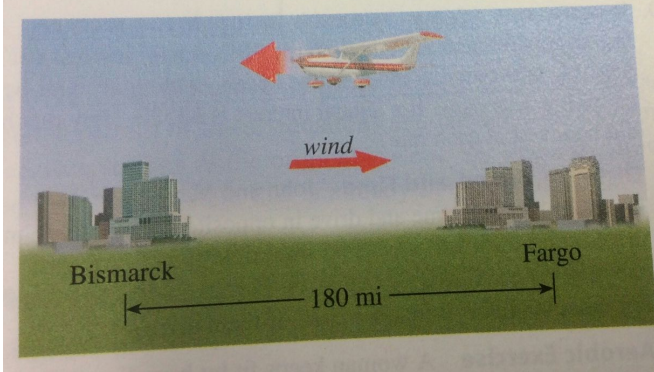
15.

The perimeter of the rectangle at right is 42 cm. The perimeter of the triangle is 36 cm. Find the values of x and y .



16.

3. **Airplane Speed** A man flies a small airplane from Fargo to Bismarck, North Dakota—a distance of 180 mi. Because he is flying into a head wind, the trip takes him 2 hours. On the way back, the wind is still blowing at the same speed, so the return trip takes only 1 h 12 min. What is his speed in still air, and how fast is the wind blowing?



17. A biologist has 2 brine solutions, one containing 5% salt and another containing 20% salt. How many milliliters of each solutions should she mix to obtain 1L of a solutions containing 14% salt?

18.

4. Without using a graphing calculator, match each of the following functions to the graphs below. Give reasons for your choices.

$$f(x) = x^3 - 8x$$

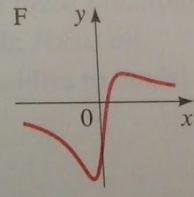
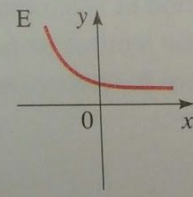
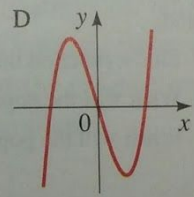
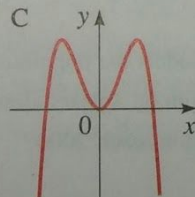
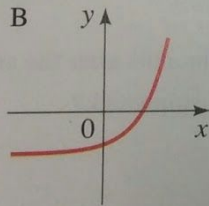
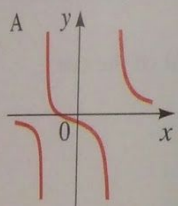
$$g(x) = -x^4 + 8x^2$$

$$r(x) = \frac{2x + 3}{x^2 - 9}$$

$$s(x) = \frac{2x - 3}{x^2 + 9}$$

$$h(x) = 2^x - 5$$

$$k(x) = 2^{-x} + 3$$



3. Let f be the quadratic function $f(x) = -2x^2 + 8x + 5$.

- Express f in standard form.
- Find the maximum or minimum value of f .
- Sketch the graph of f .
- Find the interval on which f is increasing and the interval on which f is decreasing.
- How is the graph of $g(x) = -2x^2 + 8x + 10$ obtained from the graph of f ?
- How is the graph of $h(x) = -2(x + 3)^2 + 8(x + 3) + 5$ obtained from the graph of f ?

years of education

9. Sketch graphs of the following functions on the same coordinate plane.

(a) $f(x) = 2 - e^x$

(b) $g(x) = \ln(x + 1)$

10. (a) Find the exact value of $\log_3 16 - 2 \log_3 36$.

(b) Use the Laws of Logarithms to expand the expression

$$\log \left(\frac{x^5 \sqrt{x-1}}{2x-3} \right)$$

11. Solve the equations.

(a) $\log_2 x + \log_2(x - 2) = 3$

(b) $2e^{3x} - 11e^{2x} + 10e^x + 8 = 0$ [Hint: Compare to the polynomial in Problem 5.]

12. A sum of \$25,000 is deposited into an account paying 5.4% interest per year, compounded daily.

(a) What will the amount in the account be after 3 years?

(b) When will the account have grown to \$35,000?

(c) How long will it take for the initial deposit to double?

13. After a shipwreck, 120 rats manage to swim from the wreckage to a deserted island. The rat population on the island grows exponentially, and after 15 months there are 280 rats on the island.

(a) Find a function that models the population t months after the arrival of the rats.

(b) What will the population be 3 years after the shipwreck?

(c) When will the population reach 2000?