8.1 - Systems of Equations

Review problems

1. A box has the volume of 12 cubic inches. If the width of the box is 4 in, and the length is 9 in, what is its height?
2. A circle has a circumference of 40π in. Find the radius and area of this circle.
3. Find the dimensions of a rectangle whose length is double the width, and the perimeter is 40in.
4. A can has a volume of 64 cubic inches and a radius of $1\frac{1}{3}$ inches. Find the height of the can.

Basic knowledge

5. Solve the given system of equations:

$$x + 2y = 1$$
$$3x - y = 17$$

6. A small coffee mug costs \$3, and a large mug costs \$5. Alice bought a total of 65 mugs for which she paid \$285. How many large mugs and how many small mugs did she buy?

Intermediate

7. Solve the following system of equations:

$$4x + 2y = 7$$
$$x - y = -\frac{11}{4}$$

8. I have 3 more quarters than nickles in my piggy bank. How many quarters and how many nickles do I have if their total value is \$3.75?

Advanced

9. Solve the system (hint: substitute $u = \frac{1}{x}$, and $v = \frac{1}{y}$):

$$\frac{2}{x} + \frac{3}{y} = \frac{7}{2}$$
$$\frac{7}{x} - \frac{4}{y} = -\frac{9}{4}$$

10. Find the equation of a parabola of the form $y = ax^2 + bx + c$ whose graph passess through points $(1, 0)$, $(2, 0)$ and $(0, 4)$.