

1. Solve the following system:
- $$\begin{aligned} |x - 4| &< 5 \\ x - 2 &\geq 0 \\ 2x + 1 &\leq 6 \end{aligned}$$

2. Find $\frac{CD+5}{B} - A$

when $A =$ the positive root of $x^2 + x - 6 = 0$.

$B =$ the ordinate of the y-intercept of $2x + 3y = -12$

$C =$ the value of $f(-2)$ for $f(x) = x^3 - x^2$

$D =$ the ratio of $\frac{a}{b}$ when $\frac{2a+b}{a-b} = \frac{2}{3}$

3. Two men start at the same point and travel in opposite directions. One goes $1\frac{1}{2}$ times as fast as the other. If at the end of $3\frac{1}{2}$ hours they are $192\frac{1}{2}$ miles apart, what is the rate of each?

4. Determine the equation of the perpendicular bisector of the segment with endpoints $(4, -2)$ and $(6, -5)$. (in the form $y = mx + b$)

5. Find $x + y + z$:
- $$\begin{aligned} 5x + 6y &= 17 \\ 2y + 4z &= 22 \\ x + 8z &= 10 \end{aligned}$$

6. The legs of a right triangle are in the ratio of 3:4, and the hypotenuse is 60 ft. Find the area of the triangle.

7. Find $b - m$:
- $$\begin{aligned} \frac{5}{m} + \frac{2}{b} &= 1 \\ \frac{3}{m} + \frac{6}{b} &= 1 \end{aligned}$$

8. Find all sets of three consecutive multiples of seven whose sum is between -41 and -85 .
9. Isaac went to Taco Haven for lunch. He saw that 5 soft tacos and 8 beef burritos cost \$12.80 while 3 soft tacos and 7 beef burritos cost \$10.10. How many dollars will it cost to buy 10 soft tacos and 10 beef burritos?
10. Simplify: $(6 + \sqrt{2})(\sqrt{2} - 4)^{-1}$
11. Five years ago Toni was three-fifths as old as Cindy was then. Seven years from now, Cindy will be twice as old as Toni is now. Find the sum of their ages now.
12. Find two negative integers whose product is 240 and whose difference is 8.
13. The length of a field is 12 m greater than twice its width. It cost \$1228.50 to put a fence around the field, at a cost of \$5.25 a meter. Find the area of the field.
14. The length of one side of a triangle is 2 cm less than twice the length of the altitude to that side. The area of the triangle is 30 cm^2 . Find the length of the altitude.
15. Kevin can build a fence in 8 h, while Vinay can do it in 6 h. If Kevin works alone for 5 h and then lets Vinay finish the job, how long will it take Vinay working alone to finish the fence?