Solve each equation for x

1. \(12x - 14 = 3x + 4 - 6x\)
2. \(6(x - 5) = 13 - 4(2 - 3x)\)

3. \(4x - 7 + x = 8(2x - 3)\)
4. \(\frac{x}{4} + \frac{2-x}{3} = 6\)

5. \(\frac{5x}{3} + 3 = \frac{2x}{5} + 5\)
6. \(|x - 5| = 8\)
Solve each inequality and graph its solution on a number line. In addition, write each answer in interval notation.

7. $4(x - 5) - 4x > - (x - 7)$

8. $-2 < 2(x - 8) \leq 4$

9. $x \geq -5$ and $x < 2$

10. $x + 5 \leq 3$ or $x - 2 \geq 4$

Write each union or intersection of intervals as a single interval

11. $[-5, 9] \cap [2, 15)$

12. $(-1, 5) \cup [3, \infty)$
Solve each absolute value inequality. Graph each solution on a number line, and write your answer in interval notation.

13. $|x - 4| \geq -2$  
14. $|x + 5| < 4$

15. $|x - 4| > 2$  
16. $2x + 5 < -6$

17. Let $A = \{1, 2, 3, 4, 6, 8, 10\}$  
   $B = \{0, 2, 4, 6, 7, 9\}$  
   $C = \{1, 4, 10\}$  

   Find   
   a) $B \cup C$  
   b) $A \cap B$  
   c) $(A \cup C) \cap B$  

(2 points per part)
18. The sum of four consecutive odd integers is 376. Find the integers.

19. Two pipes working together can fill a vat in 3 minutes. If one pipe can fill the vat in 8 minutes working alone, how long will it take the other pipe to fill the vat by itself?

20. Almonds worth $3.95 a pound were mixed with walnuts worth $4.25 a pound. How many pounds of each were used if there were 15 more pounds of almonds than walnuts and if the value of the mixture was $239.65?
21. A radiator contains 6 L of a 44% antifreeze mixture. How much pure antifreeze (100%) must be added to make a mixture that is a 52% antifreeze solution?

22. \[ \frac{2}{x} + \frac{3}{y} - \frac{5}{w} = 1 \] Solve for \( w \)

23. The sum of three consecutive odd integers is 135. Find the integers.

24. How many gallons of milk containing 5% butterfat must be mixed with 90 gallons of 1% milk to obtain 2% milk?

25. Norman invested one-half of his inheritance in a CD that had 10% annual yield. He loaned one-quarter of his inheritance to his sister to invest in her business. He received a 12% yield on the money. His income on these investments was $6400 for the year. How much was his inheritance?