Please do all your work on a separate piece of paper. Please show all setup and work!

Word problems

1. Find two consecutive integers whose product is 5 less than the square of the smaller number.
2. An airline runs a commuter flight between two cities that are 720 miles apart. If the average speed of the plane could be increased by 40 miles per hour, the travel time would be decreased by 12 minutes. What airspeed is required to obtain this decrease in travel time?
3. You can rent a midsize car from Company A for $250 per week with unlimited mileage. A similar car can be rented from Company B for $150 per week plus 25 cents for each mile driven. How many miles must you drive in a week in order for the rental fee for Company B to be greater than that for Company A?

Find all the solutions of the equation.

4. $x^4 - x^3 + x - 1 = 0$
5. $x^4 - 81 = 0$
6. $\sqrt{x - 10} - 4 = 0$
7. $\sqrt[3]{2x + 5} + 3 = 0$
8. $\sqrt{x} + \sqrt{x - 20} = 10$
9. $(x + 2)^{\frac{2}{3}} = 9$

Write an inequality to represent the interval, and state whether the interval is bounded or unbounded.

10. $[-1,5]$
11. $(-\infty, 7]$

Solve the inequality and sketch the solution on the real number line.

12. $4x < 12$
13. $2x + 7 < 3 + 4x$
14. $\frac{3}{4}x - 6 \leq x - 7$
15. $-4 < \frac{2x-3}{3} < 4$

Solve the inequality and sketch the solution on the real number line.

16. $|x| < 6$
17. $|3 - 4x| \geq 9$
18. $|x + 14| + 3 > 17$