Name_____

Solve each equation. All answers should be exact (no rounded decimals) and simplified improper fraction or radical.

1. $4(x - 5) + 2x = 9x + 18$

2. $108x^2 = 147$

3. $x^2 + 6x - 12 = 0$

4. $5x^2 + 9x = 2$

5. $6x = \sqrt{24 + 12x}$

6. $\dfrac{x}{x^2-36} + \dfrac{2}{x-6} = \dfrac{1}{x+6}$

7. $|2x-3| = 43$

8. $4x^2 + 28x - 32 = 0$

9. $-8x^3 - 13x^2 + 6x = 0$

10. Find the equation of a line in Slope-Intercept form that goes through the points (-6, 7), (9, 2)

11. Find the equation in Point-Slope form of a line perpendicular to $y = 4x + 5$ and goes through the point (8, -2)

12. Put the equation $y = -3x^2 - 12x - 7$ into vertex form and identify the vertex and the y-intercept.

Simplify each expression

13. $\sqrt{75}$

14. $\sqrt{1512}$

15. $(6\sqrt{3})^2$

16. $(2 + 3i)^2$

17. $\dfrac{a^2 - 4a - 32}{a+4}$

18. $\dfrac{x^2 - 16}{x^2 + 5x + 6} \div \dfrac{x^2 + 5x + 4}{x^2 - 2x - 8}$

19. $\dfrac{4}{3 + \sqrt{7}}$

Graph without a calculator

20. $y = (x - 3)^2 + 1$

21. $y = -|x + 2| + 5$

22. $y = \dfrac{3}{4}x + 2$

23. $y = \sqrt{x} - 5$

Solve the system

24. $\begin{cases} 3x - 2y = 22 \\ x + 3y = -11 \end{cases}$