Algebraic Connections *Name:* _____

Review for Mid-Term Examination *Date:* _____

1. Order the numbers listed from least to greatest. $-4.7,\ \frac{14}{3},\ 4.\overline{5},\ -\sqrt{20},\ 3$.

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2. Use interval notation to represent $-2 < x \le 3$.

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3. Identify the property demonstrated by $\pi + (-\pi) = 0$

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4. Simplify $\sqrt{45}$

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5. Simplify $5\sqrt{2} - 9\sqrt{2} + 7\sqrt{2}$

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6. Simplify $4\sqrt{12} - 6\sqrt{27} + 5\sqrt{75}$

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7. Evaluate $3y^2 + 3xy - 5x^2$ for $x = 5$ and $y = -3$

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8. Evaluate $3y + x^2y^2 - 2xy$ for $x = 2$ and $y = -4$

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9. Evaluate $\frac{3x}{2y} + 3xy^2 - \frac{12}{x}$ for $x = 2$ and $y = 3$

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10. Simplify $(7 \cdot 4 - 13) - 5^2 \cdot 2$

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11. Simplify $\frac{-35 \div 7}{3 \cdot 2 - 1}$

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12. Write the number 256,000 in correct scientific notation.

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13. Simplify $\left(x^5\right)^3$.

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14. Simplify $\left(\frac{3x^2y^3}{x^4}\right)^3$. Assume all variables are nonzero.

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15. Simplify $\left(\frac{2x^3y}{x^5}\right)^{-2}$. Assume all variables are nonzero.

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16. Solve $x - 56 = 173$

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17. Solve $12m = -180$.

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18. Solve $3(x + 2) - 9 = -33$.

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19. Solve $7(x+2)-4x=56.$

20. Write an equation to represent the relationship "5 more than a number is 17"?

21. John had 150 bags of mulch to spread in the landscape he had designed. When he finished spreading the mulch on his first day, there were 79 bags left. Write an equation that can be used to find how many bags of much he spread on his first day.

22. Susan is hiring a personal trainer. Charlie will charge $15 per hour plus no charge for the use of the gym. Nancy will charge $10 per hour plus $50 for the use of the gym. How many lessons will she have to take for the two costs to be the same?

23. Becky is an electronic book. Handy Books charged $200 for the device and $10 for each downloaded book. Lectric Books charges $150 for the device and $15 for each downloaded book. How many books will Becky need to buy before the cost is the same?

24. Solve $A=\pi\cdot r^2$ for *r*.

25. Solve $5x-10=y$ for *x*.

26. Solve $12x+5<9x-10.$

27. Solve $-3x\le 21$ AND $2x+5<23.$

28. Solve $|x|+2=17.$

29. Solve $|3x-2|\le 19.$

30. Solve $\left|\frac{2x-7}{3}\right|\ge 5$