

No Calculator!! Exact answers only!!

Solve for x .

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|---------------------------|-----------------------|----------------------------------|--------------------------|
| 1. $x^2 + 10x + 9 = 0$ | 2. $3x^2 = 10x - 3$ | 3. $2x^2 - x = 5$ | 4. $9x^2 + 6x = -1$ |
| 5. $3x^2 + 1 = 7x$ | 6. $x^2 + 4x + 1 = 0$ | 7. $10x^2 - 5 = -2x^2 + 12x + 4$ | 8. $2x^2 - 1 = 6x$ |
| 9. $6x^2 + 2x = 7x^2 - 1$ | 10. $3x^2 + 2x = 2$ | 11. $x^2 = 8x - 10$ | 12. $-4x^2 - 8x - 1 = 0$ |

Find the discriminant. Then state the number and type of solutions.

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| 13. $2x^2 + 4x + 7 = 0$ | 14. $x^2 - 3 = -6x$ | 15. $-4x^2 - 4 = 8x$ |
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Rewrite each equation in vertex form. Then, identify the vertex.

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| 16. $f(x) = 3x^2 - 24x + 53$ | 17. $g(x) = -x^2 - 6x - 13$ |
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Rewrite each equation in factored form. Then, identify the roots.

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| 18. $h(x) = 4x^2 - 9x + 2$ | 19. $g(x) = (x + 4)^2 - 4$ |
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