

Unit 3 Review

Perform the indicated operation.

1. $4x^2(3x^2 - 9x - 5) - 5x(4x^2 - 8x + 3)$	2. $(4x - 5)^2$
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Factor the following polynomials completely.

5. $16x^2 - 64y^2$	6. $1 - 4m^2$
7. $2x^2 - 3x - 5$	8. $3x^2 - 15x - 42$
9. $x^3 + 3x^2 - 4x - 12$ (Use Desmos to find Zeros)	10. $10x^2 - 23x - 5$
11. $4x^2 - 25y^2$	12. $4x^3 + 14x^2 + 10x + 35$ (Use Desmos)
13. $x^4 - 13x^2 + 36$	14. $50x^2 - 200$

Use Long Division to divide the following polynomials.

15. $(2x^3 + 7x^2 + 2x + 9) \div (x^2 + 2x + 3)$	16. $(2x^3 - 4x^2 + 2x - 10) \div (2x + 2)$
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Divide using Synthetic Division.

17. $(x^5 - 3x^3 - 4x - 1) \div (x - 1)$	18. $(9x^3 + 9x^2 + 11x - 4) \div (3x + 1)$
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Find the “k” value that makes each binomial a factor of the polynomial.

19. $(6x^4 - 19x^3 - kx^2 + 31x + 10) \div (x - 2)$	20. $(2x^3 + kx^2 + 17x - 12) \div (x - 1)$
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Factor the Polynomial using Synthetic Division then name the factors and the roots.

21. $P(x) = x^4 - 15x^2 + 10x + 24$ (USE DESMOS)	Factors: _____ Roots: _____
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Complete the descriptions of the graph below.

22. 	Vertex: _____ Zeros and multiplicities: _____ Line of Symmetry: _____ Y-Intercept: _____ Domain: _____ Range: _____ Behavior of the Intervals: Increases: _____ Decreases: _____ End Behaviors: Left: _____ Right: _____
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