

NAME \_\_\_\_\_ DATE \_\_\_\_\_

ALGEBRA II WORKSHEET: DIVIDING POLYNOMIALS

Use a separate sheet of paper for your work.

***Divide by the given monomial.***

1.  $\frac{12x^5 - 8x^3 + 9}{18x^2}$

2.  $(7a^8 - 24a^4 - 12a + 9) \cdot (42a)^{-1}$

***3-8. Divide using long division. Write remainders in fractional form.***

3.  $(3x^2 + 7x - 20) \div (x - 4)$

4.  $(2x^3 + 9x^2 + 14x + 5) \div (2x + 1)$

5.  $\frac{x^4 + 4x^3 - x - 4}{x^3 - 1}$

6.  $\frac{50c^3 + 10c^2 - 35c - 7}{5c - 4}$

7.  $(2x^4 - 3x^2 - 7x + 2) \cdot (x^2 + 2)^{-1}$

8.  $(3x^5 + 12x^4 - 9x^2 + 7x + 2) \cdot (x^2 + 2x + 3)^{-1}$

***9-12. Divide using synthetic division. Write remainders in fractional form.***

9.  $(3m^3 + 9m^2 + 8m + 4) \div (m + 2)$

10.  $(x^5 - 243) \div (x - 3)$

11.  $(x^4 - 6x^2 - 27) \cdot (x + 2)^{-1}$

12.  $\frac{n^3 - 2n^2 - 78n + 16}{n + 8}$

***13-16. Given that the second polynomial is a factor of the first, find all factors of the first polynomial.***

13.  $2x^3 - 19x^2 + 48x - 36$ ;  $2x - 3$

14.  $x^4 + x^3 - x^2 + 5x - 30$ ;  $x + 3$

15.  $24a^3 - 2a^2 - 11a + 3$ ;  $2a - 1$

16.  $c^3 + 9c^2 - 108$ ;  $c - 3$