

NAME: _____

DO NOT write your answers here. Do it in other sheets and **show all your work**.

STAPLE this sheet to your other sheets.

1. Divide using long division. State the quotient $q(x)$ and the remainder r . Then write the solution in two different ways:

1. As $D = dq + r$.

2. As $\frac{D}{d} = q + \frac{r}{d}$.

[Where D is the dividend (the polynomial that is being divided; in other words, the numerator) and d is the divisor (the polynomial that divides; in other words, the denominator).]

a) $\frac{x^3 - 2x^2 - 5x + 6}{x + 2}$

b) $\frac{3x^4 - 2x^3 - 7x^2 + x - 2}{x^2 - 2x + 3}$

c) $\frac{-2x^3 - 7x^2 + x - 2}{x^2 - x + 2}$

d) $\frac{x^7 - 1}{x - 1}$

2. Divide using synthetic division. State the quotient q and the remainder r . Then write the solution in two different ways:

1. As $D = dq + r$.

2. As $\frac{D}{d} = q + \frac{r}{d}$.

[Where D is the dividend (the polynomial that is being divided; in other words, the numerator) and d is the divisor (the polynomial that divides; in other words, the denominator).]

a) $\frac{x^3 - 2x^2 - 5x + 6}{x - 3}$

b) $\frac{-2x^3 - 7x^2 + x - 2}{x + 1}$

c) $\frac{x^4 - x^3 + x - 1}{x - 2}$

d) $\frac{x^7 - 1}{x - 1}$