

Name: _____

Polynomials and Synthetic Division

1) Carry out of the following divisions and write your answer in the form $p(x) = f(x)q(x) + r(x)$

1) $(3x^3 - x^2 + 4x + 7) \div (x + 2)$

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

3) $(x^4 - 3x^2 - 2x + 4) \div (x - 1)$

4) $(5x^4 + 30x^3 - 6x^2 + 8x) \div (x^2 - 3x + 1)$

5) $(3x^4 + x) \div (x^2 + 4x)$

6) $(2x^4 + 2x^2 - 5x - 3) \div (x - 2)(x + 1)$

7) $(2x^4 - 2x^2 - 1) \div (2x^3 - x - 1)$

8) $(x^4 + 1) \div (x + 1)$

2) For the following questions, $P(x)$ and c are given

1) Find $P(c)$

2) Divide $P(x)$ by $(x - c)$

3) Find the quotient Q and the remainder R

Function	Zero
$f(x) = x^3 - 4x^2 + 7x + 4$	-2
$f(x) = x^3 - 3x^2 + 3x - 1$	1
$f(x) = 2x^2 + 11x + 12$	-4

3) Using the remainder theorem, find the remainder of the following division

1) $(x^3 - 5x + 6) \div (x - 3)$

2) $(3x^4 - 5x^2 - 20x - 8) \div (x + 1)$

3) $(x^4 - 7x^3 + x^2 - x - 1) \div (x + 2)$

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