

## Attendance Quiz 21

Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. Use synthetic division to find the quotient and remainder when  $x^4 - 4x^2 + 2x + 5$  is divided by  $x - 2$ .

2. Let  $P(x) = 2x^3 - 5x^2 - 4x + 3$ .

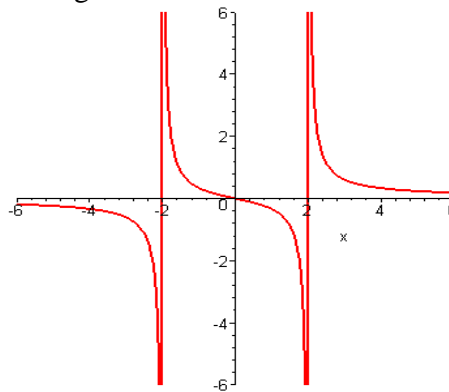
- (a) List all possible rational zeros of  $P$ .
- (b) Find the complete factorization of  $P$ .
- (c) Find the zeros of  $P$ .
- (d) Sketch approximate graph of  $P$ .

3. Perform the indicated operation and write the result in the form  $a + bi$ :

- (a)  $(3 - 2i)(4 + 3i)$
- (b)  $\frac{3 - 2i}{4 + 3i}$

4. Find all real and complex zeros of  $P(x) = x^4 - 2x^3 + 5x^2 - 8x + 4$ .

5. The graph of rational function is given below:



Find the intercepts, slant asymptote, the vertical/horizontal asymptote(s).

6. Consider the following rational functions:

$$r(x) = \frac{2x - 1}{x^2 - x - 2}, \quad s(x) = \frac{x^3 + 27}{x^2 + 4}, \quad u(x) = \frac{x^2 + 2x - 6}{x^2 - 25}$$

- (a) Find a horizontal asymptote(s) for each function.
- (b) Find a vertical asymptote(s) for each function.
- (c) Find a slant asymptote(s) for each function.
- (d) Find intercepts and domain for each function.