

ALL ANSWERS MUST BE EXACT!!!!!!!!!!!!!!

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

1 _____

2. Using synthetic substitution, find $f(2)$ given that $f(x) = x^4 - 3x^3 + 2x^2 + 5x - 6$. Show the entire process in the answer blank and circle answer. (Do not use direct substitution)

2 _____

3. Given $f(x) = 3x^3 - 2x^2 - 37x - 12$ find
a. the possible rational zeros
b. the actual zeros
c. write in factored form

3a _____

b _____

c _____

4. Given $f(x) = x^4 + x^3 - 19x^2 + 32x - 12$ find
a. the possible rational zeros
b. the actual zeros
c. write in factored form

4a _____

b _____

c _____

5. Find polynomial of least degree with the following zeros.

a. $\{-1, -2, 3\}$ b. $\{3 + 2i, 2 - \sqrt{2}\}$

5a _____

b _____

6. Sketch a graph, labeling all intercepts

$$y = -2(x + 5)(x + 2)^2(x - 2)^2$$

6 _____