

Use synthetic division to divide  $f(x)$  by  $d(x)$ .  
Write the result as a polynomial statement

1)  $f(x) = 2x^2 + 10x + 12$      $d(x) = x + 3$

2)  $f(x) = 4x^3 - 9x^2 - 14x + 5$      $d(x) = 4x - 1$

Use synthetic division to divide  $f(x)$  by  $d(x)$ .  
Write the result as a polynomial statement

$$2) \quad f(x) = 4x^3 - 7x^2 - 11x + 5 \quad d(x) = x - 1$$

$$3) \quad f(x) = 6x^3 + 11x^2 + x + 8 \quad d(x) = 2x + 1$$

Use long division to divide  $f(x)$  by  $d(x)$ . Write the result as a polynomial statement

1)  $f(x) = 2x^3 + 10x^2 + 12x + 3$      $d(x) = x^2 + 3$

Use long division to divide  $f(x)$  by  $d(x)$ . Write the result as a polynomial statement

$$2) \quad f(x) = 6x^4 - 5x^3 + 10x^2 + x + 8 \quad d(x) = 2x^2 + 1$$

Use the rational root theorem to find all of the real zeros of the function. Then rewrite the function in factored form.

$$f(x) = x^3 - 6x^2 + 7x + 4$$

1. Use the rational root theorem( $p/q$ ) to find all of the real zeros of the function. Then rewrite the function in factored form.

$$f(x) = 3x^3 + 4x^2 - 5x - 2$$

2. Given the zeros, write the function in factored and standard form

$$x = -2, x = -1/2, \text{ and } x = 1/5$$

Find all of the real zeros of the function, by first using your calculator to find an exact zero. Then use division and algebra to find the remaining 2 zeros.

$$f(x) = 5x^3 - 7x^2 - 49x + 51$$

Solve for  $x$

$$2x + \frac{12}{x} = 11$$



Solve for  $x$

$$\frac{x}{x+2} + \frac{5}{x-3} = \frac{25}{x^2 - x - 6}$$

Solve for the inequality

$$\frac{x+3}{x^2-4} \geq 0$$

Given the zero's and multiplicities find the following:

- a) Write the function in factored form
- b) Write the function in standard form

Degree: 3 Zeros:  $x = 3, -2, 1/3$

Given the zero's and multiplicities find the following:

- a) Write the function in factored form
- b) Find the end behavior of the function
- c) Find the y-intercept
- d) Graph the function

$$x = 1 \text{ (multiplicity of 3)} \quad x = -2 \text{ (multiplicity of 2)}$$

Analyze:

- Domain/Range
- Continuity
- Increasing/Decreasing
- Symmetry/Local Extrema/Concavity
- Horizontal Asy and limits
- End Behavior Asy and limits
- Vertical Asymptote and limits
- Intercepts

$$F(X) = \frac{x^2 - 3x - 10}{x + 1}$$