

1. Find the product.

$$\frac{x^2-4}{x^2-11x+18} * \frac{x^2-5x-36}{x^2-x-20}$$

$$x \neq 2, 9, 5, -4$$

$$\frac{(x+2)}{(x-5)}$$

2. Divide using the method of your choice.

$$(18x^3 + 9x^2 - 11x + 1) \div (6x + 1)$$

$$3x^2 + 1x - 2 + \frac{3}{6x+1}$$

3. Given the equation and factor, find the roots.

$$f(x) = x^3 + x^2 + 11x - 13 \quad \text{Factor is } (x - 1)$$

$$x = 1$$

$$x = \frac{-2 \pm 4i\sqrt{3}}{2} \quad \text{or} \quad -1 \pm 2i\sqrt{3}$$

4. Write an equation of a polynomial whose solutions are
- $x = 3i$
- and
- $x = -2$
- and that passes through
- $(1, -5)$
- .

$$y = -\frac{1}{6}(x^3 + 2x^2 + 9x + 18)$$

5. Factor.

a.  $4x^2 + 5x - 6$

$$(x+2)(4x-3)$$

b.  $x^2 - 10x + 24$

$$(x-6)(x-4)$$

c.  $16x^2 - 9$

$$(4x+3)(4x-3)$$

Simplify

6.  $-2i(5i - 12)$

$10 + 24i$

7.  $\sqrt{-225}$

$15i$

8. Perform the indicated operation, put the polynomial in descending order, and then fill in the blanks below.

$(2 + 3x^2 - 6x)(2 + x)$

Descending order:  $3x^3 - 10x + 4$

Degree: 3

Leading coefficient: 3

Circle One:    Monomial                      Binomial                      Trinomial                      Polynomial

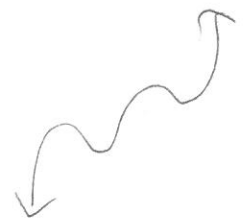
9. Write an example of a polynomial equation with an even degree and whose graph would end pointing upwards.

ex.  $3x^4 + 2x - 5$

10. What are the end behaviors of the following polynomial?

$y = 2x^5 - 5x^2 + 3x - 11$

End behaviors:            L:  $-\infty$                       R:  $+\infty$



11. Sketch a polynomial with a degree of 8, 2 real roots, and a negative leading coefficient

a. # Imaginary roots: 6

b. # Relative minimum(s): 3

c. # Relative maximum(s): 4

