

# 1.3 Division of Polynomials

## NOTES

### ALGEBRA 2

Write your  
questions here!



Ex 1:

Ex 2:

Ex 3:

Ex 4:

Which of these divisors is a factor? Why?

Ex 5:

Ex 6:

Try this!

1)

2)

**SUMMARY:**

Now,  
summarize  
your notes  
here!

1.3 Division of Polynomials

**PRACTICE**

Directions: Perform the indicated operation.

1) 
$$\frac{p^4 + 2p^3 - 6p^2 - p + 24}{p + 3}$$

2) 
$$\frac{6m^3 - 15m^2 - 19m + 37}{m - 3}$$

$$3) \frac{v^3 - 10v + 9}{v - 1}$$

$$4) \frac{b^4 - 5b^3 - 10b + 51}{b - 5}$$

Directions: Determine whether or not the given binomial is a factor of the polynomial. Show work and EXPLAIN why or why not.

5) Is  $(v - 9)$  a factor of  $(9v^4 - 81v^3 - 10v + 90)$ ?

6) Is  $(x + 1)$  a factor of  $(6x^3 + 5x^2 - 9x - 4)$ ?

Directions: Choose the best answer.

7) Let  $p(x) = x^3 - 3x^2 - 10x + 24$ . What is the remainder when  $p(x)$  is divided by  $(x - 1)$ ? Show work.

- A. 0
- B. 12
- C. 24
- D. 30

Directions: Given one factor, factor completely.

8)  $(k + 4)$  is a factor of  $(3k^3 - 5k^2 - 74k - 24)$

9)  $(v - 1)$  is a factor of  $(5v^3 - 18v^2 + 7v + 6)$

### 1.3 Division of Polynomials

## WRAP UP

Directions: Given one factor, factor completely.

1)  $(n + 3)$  is a factor of  $(n^3 - 37n - 84)$

2)

a. Use long division to divide:  $\frac{6x^3+36x^2+5x+30}{x+6}$ . Show your work.

b. Factor the numerator and then cancel any common factors of the following:  $\frac{6x^3+36x^2+5x+30}{x+6}$ .

c. Compare and contrast the methods in A and B using complete sentences. Which method do you find easier?

d. Below are two division problems. Which method (long division or factoring) would you use to solve? Explain why? Then simplify using your chosen method.

$$\frac{7x^3 - 5x^2 - 7x + 5}{x + 1}$$

$$\frac{x^3 + 4x^2 - 6x - 20}{x + 2}$$

## 1.3 Division of Polynomials

## WRAP UP

### EXIT TICKET –

The rational expression  $\frac{x^3 - 4x^2 + 6}{x^2 + 2x}$  can be written as  $ax + b + \frac{cx + d}{x^2 + 2x}$ , what are the values of  $c$  and  $d$ .

Enter your answers in the boxes. Show work to the right.

$c =$

$d =$