

TEST 7:30 Mon/Tue choose one session to attend. WebAssign P4&5  
 TEST REVIEW FRI

WEBASSIGN

I. Polynomial division

$$(1) \frac{x^2 - 64}{x} \div \frac{x^3 - 8x^2}{x^2 + 7x}$$

$$= \frac{x^2 - 64}{x} \cdot \frac{x^2 + 7x}{x^3 - 8x^2}$$

$$= \frac{(x-8)(x+8) \cdot x(x+7)}{x \cdot x^2(x-8)}$$

$$= \boxed{\frac{(x+8)(x+7)}{x^2}}$$

flip the second polynomial  
to change to multiplication

look for common factors to  
simplify.

II. Polynomial addition/subtraction

$$(2) \ 9 - \frac{7}{x+2}$$

$$= \frac{9}{1} - \frac{7}{x+2}$$

$$= \frac{9(x+2) - 7 \cdot 1}{(1) \cdot (x+2)}$$

$$= \frac{9x + 18 - 7}{x+2}$$

$$= \boxed{\frac{9x + 11}{x+2}}$$

need a common denominator.

apply the handy-dandy method

step 1. multiply the denominator

step 2. cross multiply to get the  
numerator **\*KEEP THE SIGN**

$$\frac{2}{3} - \frac{3}{5} = \frac{2 \cdot 5 - 3 \cdot 3}{3 \cdot 5} = \frac{10 - 9}{15} = \frac{1}{15}$$

$$\frac{4}{9} - \frac{2}{7} = \frac{4 \cdot 7 - 2 \cdot 9}{9 \cdot 7} = \frac{28 - 18}{63} = \frac{10}{63}$$

$$(3) \frac{6}{x-3} + \frac{17}{3-x}$$

$$= \frac{6}{x-3} - \frac{17}{x-3}$$

$$= \frac{6-17}{x-3}$$

$$= \boxed{\frac{-11}{x-3}}$$

← denominator are opposites.

step 1. change the second denominator to its opposite

step 2. change the sign between the two fraction

step 3. keep denominator the same and combine (add/subtract) the numerators.

$$(4) \frac{9x}{x-4} - \frac{4}{4-x}$$

$$= \frac{9x}{x-4} + \frac{4}{x-4}$$

$$= \boxed{\frac{9x+4}{x-4}}$$

$$(5) \frac{1}{x^2-3x-4} - \frac{x}{x^2-9x+20}$$

$$= \frac{1}{(x-4)(x+1)} - \frac{x}{(x-4)(x-5)}$$

$$= \frac{(1)(x-5)}{(x-4)(x+1)(x-5)} - \frac{(x)(x+1)}{(x-4)(x+1)(x-5)}$$

$$= \frac{x-5}{(x-4)(x+1)(x-5)} - \frac{x^2+x}{(x-4)(x+1)(x-5)}$$

$$= \frac{(x-5) - (x^2+x)}{(x-4)(x+1)(x-5)}$$

$$= \frac{\cancel{x} - 5 - x^2 - \cancel{x}}{(x-4)(x+1)(x-5)}$$

$$= \boxed{\frac{-5-x^2}{(x-4)(x+1)(x-5)}}$$

← everything that shows up in the denominators must be a part of the COMMON DENOMINATOR.

change the numerator by multiplying the original numerator by the new part in the denominator ("the non-common part")

← domain is all real numbers except 4, -1, 5