MAT 012   Practice TEST 1 – *not for points*

Prof. Clayton   Will not be collected, but will help you prepare for Test 1. **(See also last page)**

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You may want to use one of these:
$$A^3 + B^3 = (A + B)(A^2 - AB + B^2)$$
$$A^3 - B^3 = (A - B)(A^2 + AB + B^2)$$

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1.   Simplify: $7a^3 + 12a - 8 - (6a^4 - a^3 + 8a - 10) =$

2.   Factor out the greatest common factor.   [*Write the entire expression, not just the GCF.*]

     $12x^9 - 60x^7 - 28x^6 + 4x^5 =$

3.   Factor: $2x^2 - 17x + 21$

4.   Factor: $5x^3 + 40$

5.   Factor: $4x^4 - 8x^2 - 5$

6.   Solve: $3x^2 + 4x = 4$

7. Solve: $3x^4 + 33x^3 + 84x^2 = 0$

8. Factor, then divide and simplify $\dfrac{5x+15}{x^2-3x-4} \div \dfrac{x^2+2x-3}{x^2-5x+4}$

9. Given $\dfrac{x^2}{x-4} - \dfrac{x+12}{x-4}$

   a) Give the value of x for which the expression is not defined.

   b) Perform the operation and simplify. [Hint: *After combining, the correct version has a numerator which factors. Simplify the answer.*]

10. Given $\dfrac{x}{x-5} + \dfrac{50}{x^2-25} - \dfrac{x}{x+5}$

   a) Rewrite the entire expression, but factor the one denominator, which needs to be factored.

   b) Give the values of x for which the expression is not defined.

     c) Give the LCD

     d) Perform the operations and simplify. [<u>Hint</u>: *After combining, the correct version has a numerator which factors. Simplify the answer.*]

11. Given $\dfrac{4}{x^2 + 3x - 4} - \dfrac{3}{x^2 + 2x - 8}$.

     a) Rewrite the entire expression with factored denominators.

     b) Give the values of x for which the expression is not defined.

     c) Give the LCD

     d) Perform the operation and simplify.

12. Factor, then simplify: $\dfrac{10x^3 - 15x^2}{2x^2 + 5x - 12}$

13. Given $\dfrac{5}{2x-4} = \dfrac{2}{x-1}$

    a) Give the values of x for which the equation is not defined.

    b) Solve the equation. [**Don't forget to check** if your answer "candidates" are actual answers]

    c) State the answers(s).

14. Given $\dfrac{at}{2} - 3y = h$ solve for t

15. Given $\dfrac{5}{x-3} - \dfrac{30}{x^2 - 9} = 1$

    a) Rewrite the entire equation, but factor the one denominator, which needs to be factored.

    b) Give the values of x for which the equation is not defined.

    c) Give the LCD

    d) Solve the equation. [**Don't forget to check** if your answer "candidates" are actual answers]

    e) State the answer(s)

16. Given $\dfrac{2}{x+3} - \dfrac{5}{x+1} = \dfrac{3x+5}{x^2 + 4x + 3}$

    a) Rewrite the entire equation, but factor the one denominator, which needs to be factored.

    b) Give the values of x for which the equation is not defined.

    c) Give the LCD

d) Solve the equation. [**Don't forget to check** if your answer "candidates" are actual answers]

e) State the answer(s).

17. Give the LCD for the following expression. (*Since the numerators are not important, space holders are put in their places*.)

$$\frac{\#\#\#\#\#}{10x^3 \ (x-6)(x+2)} \ + \ \frac{\square\square\square}{35x^2(x+2)} \qquad\qquad \text{LCD:}$$

18. Given $\dfrac{2k-x}{3} = \dfrac{1}{k}$ solve for x

NOTE: This practice test is longer than Test 1 will be.
          Worked out solutions are posted on http://ola4.aacc.edu/sclayton1 .