_____ / 56 total points

Test #3 Name: _____

Math 71A, Prof. Beydler Wednesday, May 18, 2016

Directions: Show all work. No books or notes. A **scientific calculator** is allowed. Your desk and lap must be clear (no phones, notebooks, etc.). Please box your answers. Good luck!

1. Consider the following polynomial: $2x^3y + x^5 - 4x^3y^4 + 99 - 24y^3$
   a. (1 point) What is the degree of the first term? _____
   b. (1 point) What is the degree of the polynomial? _____
   c. (1 point) How many terms does the polynomial have? _____
   d. (1 point) What is the coefficient of the last term? _____
   e. (1 point) What is the leading term? _____
   f. (1 point) What is the leading coefficient? _____

2. (2 points) Subtract: $(6x^2y^5 - 2xy^3 - 8) - (-7x^2y^5 - 4xy^3 + 2)$

3. (3 points) Multiply: $(x^2 - 3x + 2)(x^2 + x - 1)$

4. (2 points) Multiply: $\left(\frac{1}{2}x - 3y^4\right)^2$

5. (2 points) Factor the greatest common factor from the following polynomial:
$16x^4y - 24x^3y^3 + 20x^5y^2$

6. (2 points) Factor completely, or state that the polynomial is prime: $2xy + ay - 3ab - 6bx$

7. (2 points) Factor completely, or state that the polynomial is prime: $16x^2 + 9y^2$

8. (2 points) Factor completely, or state that the polynomial is prime: $x^2 - 15xy + 36y^2$

9. (2 points) Factor completely, or state that the polynomial is prime: $250x^2 - 2x^5$

10. (2 points) Factor completely, or state that the polynomial is prime: $24xy^2 - 22xy + 4x$

11. (2 points) Factor completely, or state that the polynomial is prime: $25y^6 - 16x^4$

12. (2 points) Factor completely, or state that the polynomial is prime: $3x^4 + 10x^2 - 8$

13. (4 points) A rectangular pool measures 14 feet by 20 feet. A path of uniform width is to be added so as to surround the entire pool. We want the pool and path (together) to cover an area of 720 square feet. How wide should the path be?

14. (3 points) A guy wire runs from the top of a telephone pole to the ground. The length of the wire is 1 foot greater than the height of the pole. The distance from the base of the pole to the stake that holds the wire in the ground is 1 foot less than the height of the pole. What is the length of the wire?

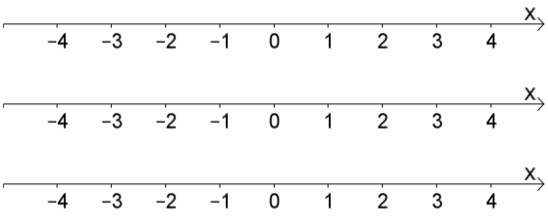
15. (2 points) Solve: $3x^2 - 3 = 7(1 - x) - 4$

16. (2 points) Solve: $(x - 3)(x + 8) = -30$

17. (3 points) Suppose $f(x) = x^2 - 2x$. Find $f(a + h) - f(a)$.

18. (3 points) Find the solution set of the following equation:
$|10x - 8| = |8x + 12|$

19. (3 points) Find the solution set of the following inequality. Express the solution set using **interval notation**.
$-2|2x - 3| + 12 \leq 10$



20. (3 points) Find the solution set of the following inequality. Express the solution set using **interval notation**.
$\left|\frac{x}{2} - 2\right| < 1$

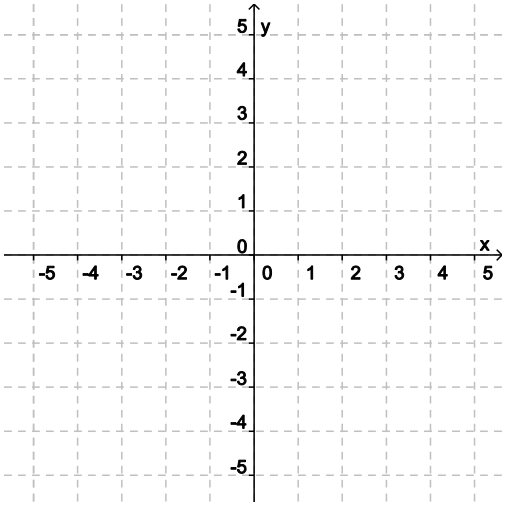
21. (4 points) Graph the solution set of the following system of inequalities:

$2x + 5y \leq 10$

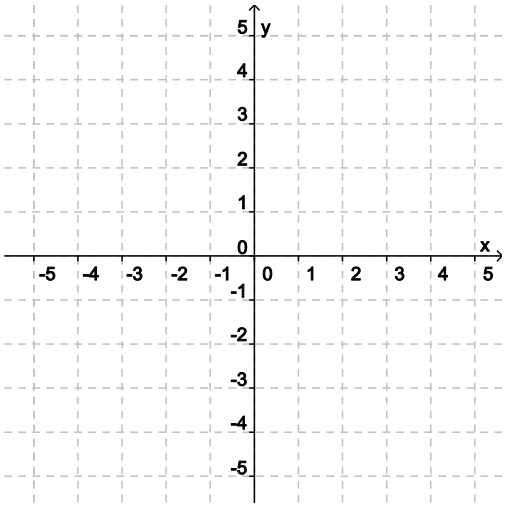
$y \leq -\frac{3}{4}x + 3$

$x \geq 0$

$y \geq 0$



(scratch work)



(final version)

Note: Remember to double check your work and turn in your homework! ☺