MTH 05, Test 3, V. 2, 11/20/18 Luis Fernández

NAME:_____

There are nineteen questions. Multiple choice questions are **5** points each. Free response
questions are **8** points each. For multiple-choice questions, circle your answer.
For free-response questions, **SHOW ALL WORK** to receive full credit.

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1. Write using only positive exponents:
$$(-x^3y^{-6}z^5)(8x^{-3}yz^4)$$

(a) $-\dfrac{8z^{20}}{x^9y^6}$

(b) $\dfrac{24x^6z^9}{y^5}$

(c) $-\dfrac{8z^9}{y^5}$

(d) $\dfrac{z^9}{8y^5}$

2. Which of the following is a factor of the polynomial $x^2 - 17x + 30$?

(a) $(x + 15)$

(b) $(x - 15)$

(c) $(x - 17)$

(d) $(x + 2)$

3. Simplify $(4x^2 + 5x - 4) - (-6x^2 - 5x + 7)$.

(a) $-2x^2 + 10x + 11$

(b) $-24x^4 - 25x^2 - 28$

(c) $10x^2 + 10x - 11$

(d) $10x^2 + 10x - 3$

4. Simplify. $\dfrac{45x^7 - 27x^3 + 36x^5}{-9x^3}$

(a) $-5x^4 + 4x^2$

(b) $-5x^4 + 3 - 4x^2$

(c) $36x^4 - 36 + 27x^2$

(d) $-5x^{21} + 3x^9 - 4x^{15}$

5. Simplify: $\dfrac{x^4 x^{-7}}{x^5}$.

    (a) x^2

    (b) x^8

    (c) $\dfrac{1}{x^8}$

    (d) $\dfrac{1}{x^5}$

6. Factor completely: $4x^2 + 11x - 3$

    (a) $(x + 3)(4x - 1)$

    (b) Cannot be factored.

    (c) $(x + 1)(4x - 3)$

    (d) $(2x + 1)(2x - 1)$

7. Multiply: $(3x - 2)(x^2 + 4x - 5)$

    (a) $3x^3 + 10x^2 - 23x + 10$

    (b) $3x^3 + 10x^2 + 7x + 10$

    (c) $12x^6 - 12x^4 + 10$

    (d) $3x^3 - 14x^2 - 23x + 10$

8. Divide and write in scientific notation:
$$\frac{3.5 \times 10^7}{5 \times 10^{-5}}$$

    (a) 7×10^{10}

    (b) 7×10^{12}

    (c) 0.7×10^{12}

    (d) 7×10^{11}

9. Which of the following is a factor of the polynomial $2cx + 5cy - 6dx - 15dy$?

(a) $2x + 5y$

(b) Cannot be factored

(c) $x - 3y$

(d) $c + 3d$

10. Expand: $(a + b)^2$

(a) $a^2 + 2ab + b^2$

(b) $a^2 + b^2$

(c) $(a + b)(a - b)$

(d) $a^2 - b^2$

11. Factor: $4x^2 - 25$.

(a) $(2x + 5)(2x - 5)$

(b) $(2x - 5)^2$

(c) Cannot be factored.

(d) $2(x - 5)(x + 5)$

12. Which of the following is a factor of $4x^4 - 100x^2$?

(a) $4x - 10$

(b) 10

(c) $x^2 + 5$

(d) $x + 5$

13. Give the product in scientific notation.

$$(6 \times 10^3)(7 \times 10^7)$$

(a) 4.2×10^{11}

(b) 42×10^{10}

(c) 4.2×10^9

(d) 4.2×10^{10}

14. Write with only positive exponents:

$$\left(\frac{12x^2y^{-3}}{4x^{-5}} \right)^{-2}$$

(a) $\dfrac{y^6}{9x^{14}}$

(b) $-\dfrac{6x^6}{y^6}$

(c) $\dfrac{9y^6}{x^9}$

(d) $-9y^6x^{-6}$

—————Free response questions start here. SHOW ALL WORK!!!—————

15. Factor completely: $\quad x^6y^3 - 16x^2y^7$

16. Multiply: $(7x - 5)(7x + 5)$

17. Factor completely: $3x^3 - 15x^2 + 18x$.

18. Multiply: $(x^2 + 3x - 6)(x - 7)$

19. Divide: $\dfrac{9x^3 - 6x^2}{3x^2}$.