

MTH 05, Test 3, V. 3, 11/20/18

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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.

1. Write using only positive exponents:

$$(-x^3y^{-6}z^5)(8x^{-3}yz^4)$$

(a) $\frac{z^9}{8y^5}$

(b) $-\frac{8z^{20}}{x^9y^6}$

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

(d) $\frac{24x^6z^9}{y^5}$

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

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

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

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

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

3. Divide and write in scientific notation:

$$\frac{3.5 \times 10^7}{5 \times 10^{-5}}$$

(a) 7×10^{11}

(b) 7×10^{10}

(c) 0.7×10^{12}

(d) 7×10^{12}

4. Which of the following is a factor of

$$4x^4 - 100x^2?$$

(a) $x + 5$

(b) $4x - 10$

(c) $x^2 + 5$

(d) 10

5. Write with only positive exponents:

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

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

(b) $\frac{y^6}{9x^{14}}$

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

(d) $-\frac{6x^6}{y^6}$

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

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

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

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

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

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

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

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

(c) Cannot be factored.

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

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

(a) $c + 3d$

(b) $2x + 5y$

(c) $x - 3y$

(d) Cannot be factored

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

- (a) $(2x + 1)(2x - 1)$
- (b) $(x + 3)(4x - 1)$
- (c) $(x + 1)(4x - 3)$
- (d) Cannot be factored.

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

- (a) $\frac{1}{x^5}$
- (b) x^2
- (c) $\frac{1}{x^8}$
- (d) x^8

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

- (a) $-5x^{21} + 3x^9 - 4x^{15}$
- (b) $-5x^4 + 4x^2$
- (c) $36x^4 - 36 + 27x^2$
- (d) $-5x^4 + 3 - 4x^2$

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

- (a) $10x^2 + 10x - 3$
- (b) $-2x^2 + 10x + 11$
- (c) $10x^2 + 10x - 11$
- (d) $-24x^4 - 25x^2 - 28$

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

- (a) $(x + 2)$
- (b) $(x + 15)$
- (c) $(x - 17)$
- (d) $(x - 15)$

14. Give the product in scientific notation.

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

- (a) 4.2×10^{10}
- (b) 4.2×10^{11}
- (c) 4.2×10^9
- (d) 42×10^{10}

_____Free response questions start here. SHOW ALL WORK!!!_____

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

16. Divide: $\frac{9x^3 - 6x^2}{3x^2}$.

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

18. Factor completely: $x^6y^3 - 16x^2y^7$

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