

MTH 05, Test 3, V. 1, 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. Multiply: $(3x - 2)(x^2 + 4x - 5)$

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

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

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

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

2. Divide and write in scientific notation:

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

(a) 7×10^{12}

(b) 7×10^{10}

(c) 7×10^{11}

(d) 0.7×10^{12}

3. Write using only positive exponents:

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

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

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

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

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

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

(a) $(x - 15)$

(b) $(x + 15)$

(c) $(x + 2)$

(d) $(x - 17)$

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

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

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

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

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

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

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

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

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

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

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

(a) x^8

(b) x^2

(c) $\frac{1}{x^5}$

(d) $\frac{1}{x^8}$

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

(a) Cannot be factored.

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

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

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

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

- (a) Cannot be factored
- (b) $2x + 5y$
- (c) $c + 3d$
- (d) $x - 3y$

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

- (a) $(2x - 5)^2$
- (b) $(2x + 5)(2x - 5)$
- (c) $2(x - 5)(x + 5)$
- (d) Cannot be factored.

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

- (a) $a^2 + b^2$
- (b) $a^2 + 2ab + b^2$
- (c) $a^2 - b^2$
- (d) $(a + b)(a - b)$

12. Write with only positive exponents:

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

- (a) $-\frac{6x^6}{y^6}$
- (b) $\frac{y^6}{9x^{14}}$
- (c) $-9y^6x^{-6}$
- (d) $\frac{9y^6}{x^9}$

13. Which of the following is a factor of

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

- (a) 10
- (b) $4x - 10$
- (c) $x + 5$
- (d) $x^2 + 5$

14. Give the product in scientific notation.

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

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

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

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

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

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

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

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