

Math 94 Review for Test 3: Sections 3.4, 5.3 – 6.4

1. Express each number in scientific notation:

(a) 21,300 (b) 0.0002

2. Express each number without exponents:

(a) 5.4×10^3 (b) 2.81×10^{-2}

3. The mass of one proton is approximately 1.7×10^{-24} gram. Find the mass of 8 million protons. Write your answer in scientific notation.

4. Express the polynomial in descending order and give its degree: $6x - x^3 + 4$

5. Add: $(2x^3 + 5x) + (-3x^3 + 8x^2)$

6. Subtract: $(4x - 3) - (-2x + 3)$

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

Multiply:

8. $(5x^3y^2)(-3xy^3)$

9. $4x^3(2x^2 - 3x + 5)$

10. $(2x + 3)(3x - 2)$

11. $(3x - 5)(3x + 5)$

12. $(4x - 3y)(3x + y)$

Divide:

13a) $\frac{-8x + 4}{-2}$ (b) $\frac{9x^4 - 12x^3 + 3x^2}{3x^2}$

14. $\frac{15x^3 - 10x}{5x^2}$

Factor out the greatest common factor (GCF):

15a) $b^3 - 3b^2$ (b) $6x^3 - 2x$

16. $4x^3y - 6xy^2 + 4xy$

Factor by grouping:

17. $x^2 - 5x + 3x - 15$

18. $6x^2 - 3x - 2x + 1$

Factor each expression completely, if possible:

19. $x^2 - 8x + 12$

20. $r^2 - rs - 12s^2$

21. $4xy^2 - 10x^2y$

22. $2x^3 + 8x^2 + 6x$

23. $x^2 - 49$

24. $9y^2 - 1$

25. $3x^2 - 12$

26. $4x^2 + 9x - 9$

27. $4x^2 + 20x + 25$