

## MAT 090 - Practice Exam Chapter 7

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Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

**Answer each question. Be careful to simplify all answers. No partial credit will be awarded without full work shown.**

**Factor each of the following polynomials completely.**

Factor using the greatest common factor method

1.  $7p - 21q$  1. \_\_\_\_\_

2.  $9xy - 18xy^2$  2. \_\_\_\_\_

Factor using grouping/common binomial method

3.  $6r^2 + 12rs - r - 2s$  3. \_\_\_\_\_

4.  $r^2 - 3rs^2 - 12s^3 + 4rs$  4. \_\_\_\_\_

Factor using special rules - diff. of square, sum/diff. of cubes

5.  $r^2 - 9$  5. \_\_\_\_\_

6.  $25x^2 - 81y^4$

6. \_\_\_\_\_

Factor using the anti-foil method (a = 1)

7.  $x^2 + 3x - 10$

7. \_\_\_\_\_

8.  $x^2 - 9x + 20$

8. \_\_\_\_\_

Factor using the anti-foil method (a > 1)

9.  $15y^2 + y - 6$

9. \_\_\_\_\_

10.  $8x^2 - 27x - 20$

10. \_\_\_\_\_

Factor using substitution

11.  $x^1 2y^6 - 8x^6 y^3 + 12$

11. \_\_\_\_\_

12.  $6a^4 b^2 0c^6 - 23a^2 b^1 0c^3 + 21$

12. \_\_\_\_\_

Factor using any of the previous methods. Simplify answers fully.

13.  $x^3 - 64y^6$

13. \_\_\_\_\_

14.  $3a^2 b - 75b$

14. \_\_\_\_\_

15.  $12a^3 - 51a^2 + 45a$

15. \_\_\_\_\_

16.  $2a^3 + 3 - 2a^2 - 3a$

16. \_\_\_\_\_

17.  $5n^3 + 25n^2 - 250n$

17. \_\_\_\_\_

18.  $81x^4 - y^4$

18. \_\_\_\_\_

**Find the solution set for each equation**

19.  $x^2 - 3x - 10 = 0$

19. \_\_\_\_\_

20.  $2m^2 = 12m + 54$

20. \_\_\_\_\_

21.  $a^2 - 36 = 0$

21. \_\_\_\_\_

22.  $9x^2 - 30x + 25 = 0$

22. \_\_\_\_\_

23.  $6x^2 = 24x$

23. \_\_\_\_\_

24.  $(x - 5)(x + 2) = 18$

24. \_\_\_\_\_

**Solve the following applications. No credit will be given for guesses. You MUST show ALL work to receive full credit.**

25. The length of a rectangle is 3 cm less than twice the width. The area of the rectangle is  $54 \text{ cm}^2$ . Find the length and width of the rectangle.

25. \_\_\_\_\_

26. A ball thrown vertically upward from the roof of a building 192 ft high with an initial velocity of 64 ft/s will have an approximate height  $h$  after  $t$  seconds give by  $h = -16t^2 + 64t + 192$ .  
When will the ball reach the ground (0 ft)?

26. \_\_\_\_\_