

Name: _____

Algebra 2- Unit 7 Test Recovery

1. Classify the polynomial: $2x^2 + 1$

2. Classify the polynomial: $33x^3 + 20x^2 - 12$

3. Determine the end behavior of $x^3 + 3x^2 - x$

4. Determine the end behavior of the graph of $f(x) = -x^2 + 4x - 12$

5. Determine the multiplicities of each zero:
 $(x + 2)^2(x - 2)^3$

6. Factor $y = x^4 - 7x^2 + 10$

7. Factor $y = 3x^4 - 7x^2 - 10$

8. Factor $y = x^3 - 4x^2 + 4x$

9. Factor $y = x^3 - 2x^2 - 23x + 60$ given $(x-3)$ is a factor.

10. Factor $y = x^3 - 125$

11. Find **ALL** the roots. $x^4 - 11x^2 + 10 = 0$

12. Find **ALL** the roots. $x^4 - 9x^2 + 20 = 0$

For 13-18 use the following functions $f(x) = 3x^2 - 2x$ $g(x) = 3x - 5$

13. Find $(f + g)(x)$

14. Find $f(x) - g(x)$

15. Find $(f \cdot g)(x)$

16. Find $\frac{f(x)}{g(x)}$

17. Find $(g \circ f)(x)$

18. Find $g^{-1}(x)$

19. Determine the inverse of $f(x) = \frac{4x-9}{7}$

20. Factor $x^4 - 3x^2 - 10$

21. Find all roots of $x^4 - 7x^2 + 10 = 0$

For 22-25 and the bonus use:

$$f(x) = 2x^2 + 1 \quad \text{and} \quad g(x) = 4x - 5$$

22. Determine $f(x) + g(x)$

24. Determine $(g \circ f)(x)$

25. Determine $g^{-1}(x)$

23. Determine $f(x) \cdot g(x)$

26. Determine $\frac{g(x)}{f(x)}$

Formulas:

$$a^3 + b^3 = (a + b)(a^2 - ab + b^2)$$

$$a^3 - b^3 = (a - b)(a^2 + ab + b^2)$$