Unit 3 Quiz 1 Review

Factor the sum and difference of cubes.

1. $x^3 + 27$

2. $64y^3 - 27$

3. $32x^6 - 500x^3$

4. $f(x) = x^3 + 3x^2 - 6x - 8$

A. What are all of the possible rational zeros of *f*(x)?

B. Determine all of the rational roots. Show work.

Solve each.

5. $x^2 - 4x + 4 = 0$	6. $x^2 - 81 = 0$	7. $x^2 + x - 12 = 0$
8. $x^3 - 5x^2 - 4x + 20 = 0$	9. $2x^2 + 13x - 24 = 0$	10. $6x^2 - 31x + 5 = 0$
11. $4x + 12 + x^2 + 3x = 0$	12. $x^3 + 5x^2 - 9x - 45 = 0$	13. $x^2 - 8x - 48 = 0$

Multiple Choice Select the best choice for each problem.

14. Find all of the rational zeros of $g(x) = 2x^3 + 4x^2 - 2x - 4$.

A) $x = \{2, 4, -2, -4\}$ B) $x = \{-2, 1, 2\}$ C) $x = \{4, 1, -4\}$

D) $x = \{-4, -1, 4\}$ E) $x = \{-2, -1, 1\}$

15. Consider $g(x) = 2x^3 + 4x^2 - 2x - 8$.
If we were to list all of the possible rational zeros using the rational root theorem (p/q) for the polynomial we would have how many possible rational zeros?

A) 3 B) 4 C) 5 D) 8 E) more than 8

Find all zeros and list any multiplicity.

16. $y = x^3(x - 2)(x + 4)^2$ 17. $y = x(x + 2)^2(x + 3)$ 18. $y = x^4 + 7x^3 + 12x^2$

Find all the zeros of the function using synthetic division, factoring or quadratic formula. Find p/q's.

19. $f(x) = 2x^3 + 3x^2 - 59x - 30$ 20. $f(x) = x^3 - 5x^2 - 48x + 108$

21. $f(x) = 10x^4 - 13x^3 - 21x^2 + 10x + 8$