Unit 4

State how many complex zeros the function has and identify as real and non-real.

1. $f(x) = x^2 - 2x + 7$

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

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

4. $f(x) = x^5 - 2x^2 - 3x + 6$

Write a polynomial in factored form given the following zeros.

5. x = 1, 3*i*

6. x = 3, -2 (mult of 2), 4*i*

Use the given zero to find all the zeros of the function.

7. -4; $x^3 + 4x^2 + 25x + 100$

8. 2; $x^4 - x^3 - x^2 - x - 2$

9. $3i, f(x) = x^3 + x^2 + 9x + 9$

Unit 5

Convert the radical to exponent form and vice versa:

10. $(\sqrt[3]{x})^4$

11. $x^{\frac{8}{3}}$

Solve the following equations, check for extraneous solutions:
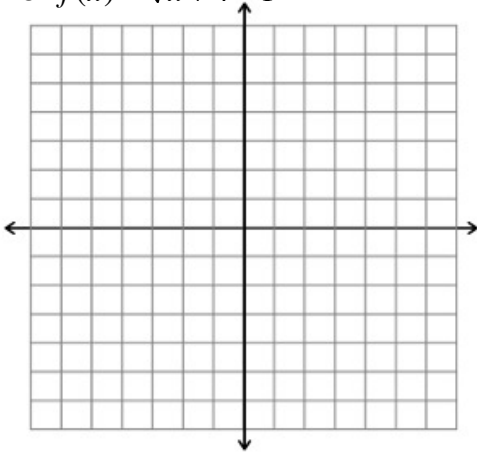
12. $\sqrt{x-1} = 5$

13. $x-6 = \sqrt{18-3x}$
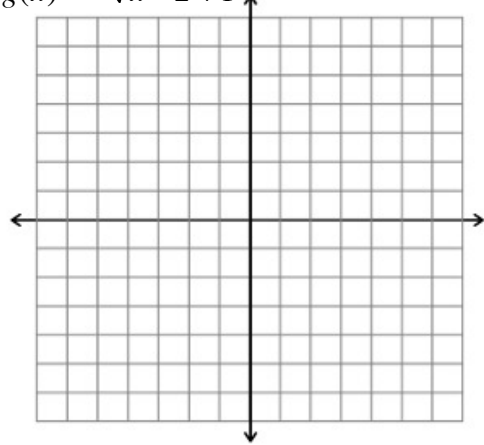
14. $(x+4)^{\frac{1}{2}} = 6$

15. $(x-6)^{\frac{1}{2}} = x-2$

Graph the following and state the domain and range:
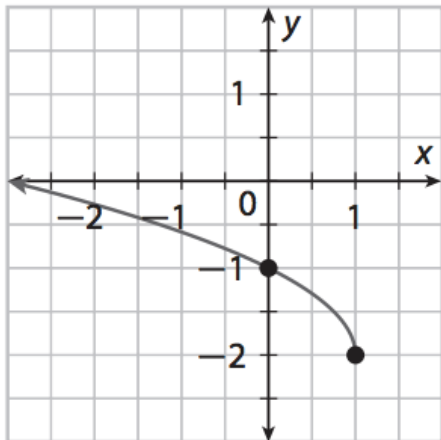
16. $f(x) = \sqrt{x+4} - 1$

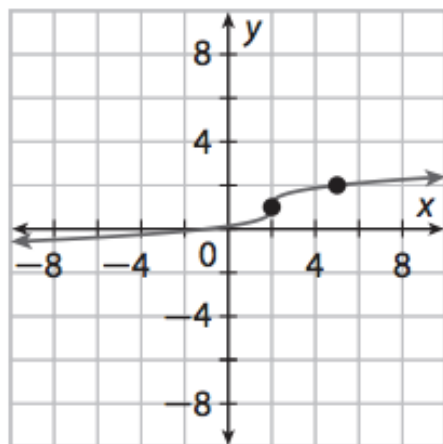

17. $g(x) = -\sqrt[3]{x-2} + 1$

Write the equation for the following graphs:

18.

19.

Unit 6

Perform the following operations.   List excluded values.

20. Divide $\dfrac{x+2}{x-4} \div \dfrac{x}{3x-12}$

21. Multiply $\dfrac{(x-5)(x+1)}{3x-15} \bullet \dfrac{4}{(x-3)(x+1)}$

22. Add. $\dfrac{1}{3+x} + \dfrac{3-x}{x}$

23. Subtract. $\dfrac{4}{(x+1)(x-1)} - \dfrac{x+2}{x-1}$

Solve the following rational equations. Be cautious of extraneous solutions.

24. $\dfrac{2x}{x-1} + \dfrac{1}{x-3} = \dfrac{2}{(x-1)(x-3)}$

25. $f(x) = \sqrt[3]{x} - 5$

26. It takes 1.5 hours for Tim to mow the lawn. Linda can mow the same lawn in 2 hours. How long will it take John and Linda, work together, to mow the lawn?

Find the inverse of the following:

27. $f(x) = \dfrac{2x-3}{x+1}$

28. $f(x) = \sqrt[3]{x} - 5$