Algebra II Unit 7 Review

1. Find the equation of a 3rd degree polynomial with real roots at 2, double at –3 and passes through the point (-2, 5).

2. Simplify each of the following: a) $(3^2 \cdot 2^{\frac{1}{2}})^4$ b) $\sqrt[3]{27a^3y^9z^4}$

3. If you look at the graph of an equation, how can you tell what degree it is and how many real or imaginary roots it has?

4. Suppose you had the data: 4, 15, 6, 8, 10, 12, 14, 15, 19, 2, 15, 22, 23, 11, 5
   Find the: a) mean b) mode c) median d) range e) standard deviation

5. Suppose f(x) = 3x + 2 and g(x) = $4x^2$ – 1 find:
   a) f(x) + g(x) b) f(g(x))

6. Write the inverse of each of the following: a) f(x) = 3x + 2 b) f(x) = $-2x^3 + 4$

7. Graph each of the following and state the domain and range:
   a) f(x) = 2(½)^x b) f(x) = $\sqrt{3x-2}$

8. Solve, check for extraneous solutions.
   a) $x^{2/3} + 4 = 20$ b) $\sqrt{x+2} = x + 2$

Answers:

1. $y = -5/4\,(x-2)(x+3)^2$
2. a) 26244 b) $3ay^3z\sqrt[3]{z}$
3. degree = highest power of x, real = how many times it crosses the x-axis, imaginary = total roots - reals
4. a) 12.067 b) 15 c) 12 d) 21 e) stand. Dev = 6.17
5. a) $4x^2 + 3x + 1$ b) $12x^2-1$
6. a) $f^{-1}(x) = (x-2)/3$ b) $f^{-1}(x) = \sqrt[3]{\frac{x-4}{-2}}$
7. a) D: $(-\infty, \infty)$ R: $(0, \infty)$ b) D:$[.85, \infty)$ R: $[.85, \infty)$
8. a) 64 b) –2 & -1