Algebra II
Final Exam Study Guide V.1
Fall 2022

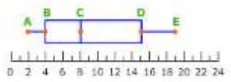
#	Instruction	Problem	Solution
1	Simplify	$\sqrt{175}$	
2	Simplify	i^{7137}	
3	Divide the complex numbers	$\frac{4+i}{8+9i}$	
4	Simplify the complex numbers	$(-4-7i)+(5-7i)$	
5	Simplify the complex numbers	$(8-4i)(2-6i)$	

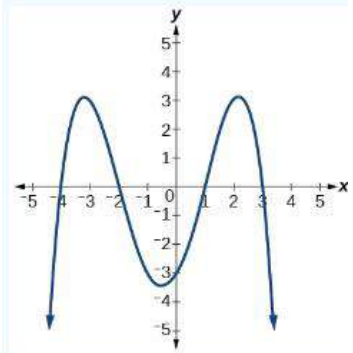
6	**Simplify**	$(3v^4 - 2 + 8v^2) + (6v^2 + 4 - 7v^4)$	
7	**Simplify**	$(8m^2 - 2mn - 7n^2)(6m + 3n)$	
8	**Use Pascal's Triangle to find the Product for the binomials**	$(x + 3y)^4$	
9	**Divide the polynomials**	$\dfrac{x^3 + 12x^2 + 20x}{x^2 + 10x}$	
10	**Find the inverse algebraicall y**	$h(x) = 2x^3 + 3$	

11	**Find the inverse from a table**	<table><tr><th>x</th><th>$f(x)$</th></tr><tr><td>−5</td><td>5</td></tr><tr><td>0</td><td>0</td></tr><tr><td>5</td><td>−5</td></tr><tr><td>10</td><td>−10</td></tr><tr><td>15</td><td>−15</td></tr></table> $f^{-1}(-5) =$	
12	**Verify that f(x) and g(x) are inverse functions**	$f(x)=3-4x$ $g(x)=\frac{3-x}{4}$	
13	**Solve the composite functions f(x) = 2x – 1 g(x) = 3x h(x) = x^2 + 1**	$f(g(h(2)))$	
14	**Factor the polynomial over the integers**	$45x^3 + 15x$	
15	**Factor the polynomial by grouping**	$x^3 - 7x^2 - x + 7$	

16	**Name the zeros, their multiplicity, and the effect of the multiplicity on the graph.**	$f(x) = x^2(x-1)^4(x+5)$	<table><tr><th>Zero</th><th>Multiplicity</th><th>Effect</th></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table>
17	**Find each quotient and list all excluded values**	$\frac{x+10}{10x^2} \div \frac{x^2-10x}{x^2-100}$	
18	**Add the rational expressions**	$\frac{x^2}{x-1} - \frac{2x-7}{1-x}$	
19	**Solve the rational equation algebraically**	$\frac{x+1}{x+3} = \frac{2}{x}$	
20	**Simplify Radical Expressions**	What is the simplified expression of $\sqrt{\frac{36x^8}{4x^6}}$?	

21	**Evaluating Radicals**	What is the sum of $\frac{1}{3\sqrt{25}}$ and $\frac{1}{2\sqrt[3]{27}}$?	
22	**Multiplying Radicals**	What is the simplified form of $(2\sqrt{5}+3)(\sqrt{5}-1)$?	
23	**Solve the logarithmic equations**	$\log_3(3x-6) = \log_3(2x+1)$	
24	**Solve the logarithmic equations**	$\log_5 4 + \log_5 x = \log_5 36$	
25	**Solve the logarithmic equations**	$5 + 2\log_2 x = 21$	
26	**Solve the logarithmic equations**	$\log_2 x + \log_2(x-7) = 3$	
27	**Finding Mean**	What is the mean of these numbers? 4,5,5,2,3,3,2,8	

28	**Finding Median**	Find the median of the data set: 18, 19, 17, 14, 20, 20, 15, 21	
29	**Calculating Standard Deviation**	What is the standard deviation for the data given: {5, 10, 7, 12, 0, 20, 15, 22, 8, 2}	
30	**Interpreting Box and Whisker Plots**	What is the interquartile range of the data set below? 3, 5, 6, 6, 7, 8, 9	
31	**Interpreting Box and Whisker Plots**	 What do points A and E represent on the box plot?	
32	**Creating Box and Whisker Plots**	**Make a box-and-whisker plot for the ages of the members of the 2008 U.S. women's wheelchair basketball team.** **24, 30, 30, 22, 25, 22, 18, 25, 28, 30, 25, 27**	

33	**Interpret and sketch the polynomial**	17. $F(x) = 2x^3 - x^2 - 50x + 25$ Degree: Leading Coefficient: End Behavior: Zeros and Behavior:	**Sketch:**
34	**Identify the zeros and their multiplicity**		
35	**Factor and sketch the polynomial**	Factor- to find the zeros $f(x) = x^3 + x^2 - x - 2$