Algebra 2 Fall 2019 Name_____

Final Exam Study Guide

Date_____ Period____

Unit 1 Topics include:
adding/subtracting fractions + solving a multi-step equation + laws of exponents + operations with complex numbers + powers of i

Solve each equation.

1) $25 + 7x = -2(-2 - 5x)$

Simplify.

2) This answer should only contain positive exponents.
$(u^{-1}v^4)^2 \cdot uv^4$

3) $\dfrac{8i}{-10 + 9i}$

4) Find the result from i^{73}.

5) Add.
$\dfrac{2}{3} + \dfrac{1}{7}$

Unit 2 Topics include:
characteristics of function graphs + composition of functions + function inverses + function transformations + evaluate functitons

Evaluate each function.

6) $g(x) = 2x + 1$; Find $g(4)$

7) $g(x) = 3x - 5$
$f(x) = 3x - 1$
Find $g(f(x))$

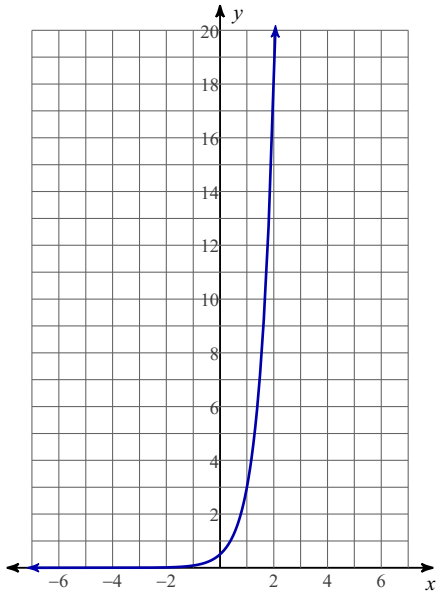
8) Find the inverse of the function.

$f(x) = \dfrac{x - 3}{3}$

9) Describe the transformations that map f(x) to g(x).
f(x) = x^2
g(x) = $\dfrac{1}{2}x^2 - 5$

For the graph below, give the domain, range, y-intercept, x-intercept and end behavior.

10)



Unit 3 Topics include:
factoring by grouping + factoring a sum of cubes + solve by quadratic formula + solve by square roots + evaluate a discriminant and describe the number and type of roots

11) Factor by grouping.
$35n^3 - 28n^2 + 15n - 12$

12) Factor.
$8x^3 + 1$

13) Solve by using quadratic formula.
$5x^2 + 7x = 138$

14) Solve by using square roots.
$7n^2 + 1 = -83$

15) Find the discriminant and then state the number and type of solutions.
$-9p^2 - 3p - 5 = 0$

Unit 4 Topics include:
simplifying a cube root + mutliplying radical expressions + adding radical expressions + converting between rational exponents and radicals + solving a radical equation.

Simplify.

16) $\sqrt[3]{-216u^2v^8}$

17) $5\sqrt{12p} \cdot \sqrt{6p^3}$

18) $-3\sqrt{20} + 3\sqrt{45} - 3\sqrt{18}$

19) Write in exponential form.
$\left(\sqrt[3]{3x}\right)^5$

20) Write in radical form.
$(2b)^{\frac{2}{3}}$

Solve the equation. Remember to check for extraneous solutions.

21) $\sqrt{14x - 3} + 6 = 15$

Unit 5 Topics include:
solve exponential equations using same base + convert between logarithmic and exponential forms + condense a logarithmic expression + expand a logarithmic expression + solve a logarithmic equation

Solve each equation.

22) $2^{2n} = \frac{1}{32}$

23) $\log_2 x + \log_2 7 = 2$

Rewrite each equation in exponential form.

24) $\log_6 6 = 1$

Rewrite each equation in logarithmic form.

25) $\left(\frac{8}{19}\right)^{y} = x$

Condense each expression to a single logarithm.

26) $12\log_6 a - 2\log_6 b$

Expand each logarithm.

27) $\log_8 \left(u \cdot v \cdot w^4\right)$

Unit 6/7 Topics include:
multiply or subtract polynomials + use synthetic division to divide a polynomial by a linear binomial + simplify a rational expression + divide two rational expressions

Find each product.

28) $(6n - 8)(4n + 6)$

Simplify each difference.

29) $(7p - 8p^3 - 2) - (4p^3 - 2 - 6p)$

Divide.

30) $(k^3 - 3k^2 - 14k - 9) \div (k + 2)$

Simplify each expression.

31) $\frac{r^2 + 8r - 9}{r^2 + 13r + 36}$

32) $\frac{n^2 + 17n + 70}{n - 9} \div \frac{n^2 + 5n - 50}{n - 5}$

