Accelerated Geometry CC Name_____

REVIEW FOR SPRING EXAM #1

Date_____ Period____

Use a calculator to approximate each to the nearest thousandth.

1) $\log_3 20$

Rewrite each equation in exponential form.

2) $\log_{14} b = a$

3) $\log_6 \frac{1}{216} = -3$

Rewrite each equation in logarithmic form.

4) $144^{\frac{1}{2}} = 12$

5) $x^{-12} = y$

Condense each expression to a single logarithm.

6) $10\ln z + 10\ln x - 5\ln y$

7) $18\log_9 u + 6\log_9 v + 6\log_9 w$

Expand each logarithm.

8) $\log_7 \left(uv^5\right)^5$

9) $\log_6 \left(y \cdot z \cdot w\sqrt{x}\right)$

Identify the domain and range of each.

10) $y = \ln\left(x + 4\right)$

11) $y = \log\left(x - 2\right) - 3$

Find the inverse of each function.

12) $y = \log_x 4 - 4$

13) $y = \log_5\left(x - 8\right)$

Solve each equation.

14) $\log_{12}\left(p^2 - p\right) = \log_{12}\left(35 + p\right)$

15) $\log_{15}\left(k^2 + 4k\right) = \log_{15}\left(10 + k\right)$

16) $\log_3 2 + \log_3 2x^2 = 4$

17) $\log_3 4 - \log_3 3x = \log_3 40$

18) $32^r = 16^{2r-1}$

19) $36^{3-3m} = 216^{2m}$

Simplify.

20) $\left(2y^2\right)^5$

21) $\left(2m^5n^5\right)^3$

Simplify. Your answer should contain only positive exponents with no fractional exponents in the denominator.

22) $\left(x^2\right)^{\frac{4}{3}}$

Simplify.

23) $\sqrt[3]{64x^4y^4z^6}$

24) $\sqrt[4]{64x^6y^7z^3}$

Approximate the relative minima and relative maxima of each function to the nearest tenth.

25) $f(x) = x^2 + 4x - 1$

26) $f(x) = -x^3 - 5x^2 - 8x - 8$

Simplify each expression.

27) $\left(7p^2 + 2 + 4p^4\right) + \left(4p - 4 - 7p^4\right)$

28) $\left(5r + 5r^3 - 4r^2\right) - \left(6r^2 + 6r^3 + 5r\right)$

Divide.

29) $\left(10x^2 + 33x - 28\right) \div (x + 4)$

Find all roots.

30) $5x^3 - 6x^2 + x = 0$

State the possible rational zeros for each function. Then find all zeros.

31) $f(x) = x^3 - 4x - 15$

32) $f(x) = 5x^3 - x^2 - 5x + 1$

Find all zeros.

33) $f(x) = x^4 + 5x^2 + 4$

34) $f(x) = x^3 + 5x^2 - 46x - 20$

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

Factor each.

36) $x^3 - 7x^2 + 10x = 0$

State if the given binomial is a factor of the given polynomial.

37) $\left(x^3 + 11x^2 + 15x - 27\right) \div (x + 9)$

38) $\left(x^3 + 20x^2 + 108x + 82\right) \div (x + 10)$

Write a polynomial function of least degree with integral coefficients that has the given zeros.

39) $2, \quad 0, \quad 3, \quad -5$

40) $2, \quad 4, \quad -i$

Answers to REVIEW FOR SPRING EXAM #1

1) 2.727

2) $14^a = b$

3) $6^{-3} = \frac{1}{216}$

4) $\log_{144} 12 = \frac{1}{2}$

5) $\log_x y = -12$

6) $\ln \frac{z^{10}x^{10}}{y^5}$

7) $\log_9 \left(w^6 v^6 u^{18}\right)$

8) $5\log_7 u + 25\log_7 v$

9) $\log_6 y + \log_6 z + \log_6 w + \frac{\log_6 x}{2}$

10) Domain: $x > -4$
Range: All reals

11) Domain: $x > 2$
Range: All reals

12) $y = 4^{\frac{1}{x+4}}$

13) $y = 5^x + 8$

14) $\{-5, 7\}$

15) $\{2, -5\}$

16) $\left\{\frac{9}{2}, -\frac{9}{2}\right\}$

17) $\left\{\frac{1}{30}\right\}$

18) $\left\{\frac{4}{3}\right\}$

19) $\left\{\frac{1}{2}\right\}$

20) $32y^{10}$

21) $8m^{15}n^{15}$

22) $x^{\frac{8}{3}}$

23) $4xyz^2\sqrt[3]{xy}$

24) $2xy\sqrt[4]{4x^2y^3z^3}$

25) Minima: $(-2, -5)$
Maxima: None

26) Minima: $(-2, -4)$
Maxima: $(-1.3, -3.9)$

27) $-3p^4 + 7p^2 + 4p - 2$

28) $-r^3 - 10r^2$

29) $10x - 7$

30) $\left\{0, \frac{1}{5}, 1\right\}$

31) Possible rational zeros: $\pm 1, \pm 3, \pm 5, \pm 15$
Zeros: $\left\{3, \frac{-3 + i\sqrt{11}}{2}, \frac{-3 - i\sqrt{11}}{2}\right\}$

32) Possible rational zeros: $\pm 1, \pm \frac{1}{5}$
Zeros: $\left\{\frac{1}{5}, -1, 1\right\}$

33) $\{2i, -2i, i, -i\}$

34) $\{5, -5 + \sqrt{21}, -5 - \sqrt{21}\}$

35) $\left\{2, \frac{1}{2}, -1\right\}$

36) $x(x-2)(x-5) = 0$

37) Yes

38) No

39) $f(x) = x^4 - 19x^2 + 30x$

40) $f(x) = x^4 - 6x^3 + 9x^2 - 6x + 8$