

Math 3

Name _____

Unit 4 Test

Date _____ Period _____

Solve each equation.

1) $\log_6 2x^2 - \log_6 2 = 4$

2) $\log_3 x - \log_3 (x - 3) = 2$

3) $\log_6 x - \log_6 (x - 4) = 2$

4) $\log_9 3x^2 + \log_9 6 = 4$

5) $\left(\frac{1}{625}\right)^{2x} = 5^3$

6) $36^{2v-2} = 216$

7) $36^{-2n-1} = 216$

8) $\left(\frac{1}{1000000}\right)^{3a-1} = 1000^{-3a-1}$

Solve each equation. Round your answers to the nearest ten-thousandth.

9) $9^{p-10} + 5 = 70$

10) $-8 \cdot 12^{-7k} = -99$

11) $e^{10x} + 6 = 93$

12) $16^{-n} - 7 = 45$

Find all roots.

13) $x^4 + x^2 - 2 = 0$

14) $x^4 - 2x^2 - 3 = 0$

15) $x^6 + 5x^4 - 25x^2 - 125 = 0$

16) $x^4 + 5x^2 - 6 = 0$

17) $x^4 + 6x^2 + 9 = 0$

18) $x^3 + 27 = 0$

Unit 4 Test

Solve each equation.

$$1) \log_6 2x^2 - \log_6 2 = 4$$

$$\{36, -36\}$$

$$3) \log_6 x - \log_6 (x-4) = 2 \quad \left\{ \frac{144}{35} \right\}$$

$$5) \left(\frac{1}{625} \right)^{2x} = 5^3 \quad \left\{ -\frac{3}{8} \right\}$$

$$7) 36^{-2n-1} = 216 \quad \left\{ -\frac{5}{4} \right\}$$

$$2) \log_3 x - \log_3 (x-3) = 2 \quad \left\{ \frac{27}{8} \right\}$$

$$4) \log_9 3x^2 + \log_9 6 = 4 \quad \left\{ \frac{27\sqrt{2}}{2}, -\frac{27\sqrt{2}}{2} \right\}$$

$$6) 36^{2v-2} = 216 \quad \left\{ \frac{7}{4} \right\}$$

$$8) \left(\frac{1}{1000000} \right)^{3a-1} = 1000^{-3a-1}$$

$$\{1\}$$

Solve each equation. Round your answers to the nearest ten-thousandth.

$$9) 9^{p-10} + 5 = 70$$

$$11.8998$$

$$11) e^{10x} + 6 = 93$$

$$0.4466$$

Find all roots.

$$13) x^4 + x^2 - 2 = 0$$

$$\{i\sqrt{2}, -i\sqrt{2}, -1, 1\}$$

$$15) x^6 + 5x^4 - 25x^2 - 125 = 0$$

$$\{i\sqrt{5} \text{ mult. } 2, -i\sqrt{5} \text{ mult. } 2, \sqrt{5}, -\sqrt{5}\}$$

$$17) x^4 + 6x^2 + 9 = 0$$

$$\{i\sqrt{3} \text{ mult. } 2, -i\sqrt{3} \text{ mult. } 2\}$$

$$10) -8 \cdot 12^{-7k} = -99$$

$$-0.1446$$

$$12) 16^{-n} - 7 = 45$$

$$-1.4251$$

$$14) x^4 - 2x^2 - 3 = 0$$

$$\{\sqrt{3}, -\sqrt{3}, i, -i\}$$

$$16) x^4 + 5x^2 - 6 = 0$$

$$\{i\sqrt{6}, -i\sqrt{6}, -1, 1\}$$

$$18) x^3 + 27 = 0$$

$$\left\{ -3, \frac{3 + 3i\sqrt{3}}{2}, \frac{3 - 3i\sqrt{3}}{2} \right\}$$