

MATH 100 Spring 2008 Practice Problems II

Due Date : May 6, 2008

Show all work. Credit may not be given without sufficient supporting work.

<p>1. Determine the domain of $f(x) = \sqrt[3]{2x-12}$. <u>Write your answer using interval notation</u></p> <p>2. Determine the domain of $f(x) = \sqrt{10-5x}$. <u>Write your answer using interval notation.</u></p> <p>3. Given $f(x) = \sqrt[3]{3x-21}$ evaluate the following. (a) $f(-12)$ (b) $f(-\frac{14}{6})$ (c) $f(9.4)$</p> <p>4. Given $f(x) = \sqrt{10-5x}$, evaluate the following. (a) $f(\frac{7}{5})$ (b) $f(-6.5)$ (c) $f(1.9)$</p> <p>5. Perform the following additions and subtractions. (a) $\sqrt{50x} + 6\sqrt{32x} - 15\sqrt{18x}$ (b) $2\sqrt[3]{40y} + 11\sqrt[3]{5000y} - 21\sqrt[3]{135y}$</p> <p>6. Perform the following multiplications. (a) $(6\sqrt[3]{5})(2\sqrt[3]{5})$ (b) $2\sqrt{5}(3\sqrt{5} - 2\sqrt{10})$</p> <p>7. Perform the division by rationalizing the denominator and then simplifying (a) $\frac{12}{\sqrt{7}-\sqrt{3}}$ (b) $\frac{7}{\sqrt{5x}-\sqrt{3y}}$</p>	<p>8. Solve the following radical equations (a) $\sqrt{x-3} = 11$ (b) $\sqrt{x+6} = x$ (c) $\sqrt{3x+1} + 3 = x$</p> <p>9. Simplify each expression. Express all answers in terms of positive exponents. Assume that all variables represent positive real numbers. (a) $\frac{y^{1/4}}{y^{1/5}}$ (b) $(25v^{-4/9})^{3/2}$</p> <p>10. Multiply and express the answer in terms of positive exponents. $3w^{5/11}(2w^{7/11} - 5w^{6/11} - 9w^{-5/11})$</p> <p>11. Write the first five terms of each sequence. a) An arithmetic sequence with $a_1 = 5$ and common difference of 4. b) A geometric sequence with $a_1 = 5$ and common ratio of 4.</p> <p>12. Given $f(x) = 16^x$, evaluate each expression (a) $f(\frac{1}{2})$ (b) $f(\pi)$ (c) $f(-6)$</p>
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13. The strontium-90 in a nuclear reactor decays continuously. If 100 mg is present initially, the amount present after t years is given by $A(t) = 100e^{-0.0248t}$

Approximate to the nearest tenth of a milligram the amount left after 20 years.

14. Solve each exponential equation.

(a) $27^{2y} = 3$ (b) $64^{2n+12} = 2$

(c) $\left(\frac{2}{7}\right)^w = \frac{49}{4}$ (d) $10^y = 0.000001$

15. Write the inverse of each relation (if it has) by using ordered pair notation.

(a) $\{(2,-1), (0,3), (-4,6)\}$

(b) $\{(-0.7, \pi), (-0.5, \pi), (1.3, \pi)\}$

16. Write the inverse of each function by using function notation.

(a) $f(x) = 7 - 5x$ (b) $f(x) = \frac{2}{3}x + 5$

17. Use $f(x) = 4x - 3$ and $f^{-1}(x) = \frac{x+3}{4}$

To evaluate

(a) $f\left(\frac{3}{4}\right)$ (b) $f^{-1}(37)$

18. Translate each Exponential equation to Logarithmic form:

(a) $5^x = 35$ (b) $6^x = \frac{1}{36}$

19. Translate each Logarithmic equation to Exponential form:

(a) $\log_2(x) = 3$ (b) $\log_{1/3}(x) = 27$

20. Solve the following Logarithmic Equations:

(a) $\log_6(3x - 4) = 2$ (b) $\log_x(8) = 3$