Pre-Calc. Review 3.1-3.3

1) Sketch the graph and state the domain and range in INTERVAL notation : $y = 4^{x+3} - 2$

2) Sketch the graph and state the domain and range in SET notation : $y = \log_3(x) + 4$

3) Find each logarithm without using a calculator

a) $3^{2\log_3 7}$ b) $\log_{\frac{1}{27}} \frac{1}{9}$ c) $\ln\sqrt{e}$ d) $\log_5 5^8$ e) $\log_8\left(8\sqrt[3]{8}\right)$ f) $3 - e^{\ln x^3}$

4) Condense into a single log

a) $\frac{2}{3}\ln 27 - \ln 2 - 3\ln y$ b) $\frac{1}{2}\log_b M + \frac{1}{2}\log_b N - 4\log_b K$

c) $\log_5 12 + \log_5\left(x^2 - 9\right) - \log_5\left(2x^2 - 9x + 9\right)$

5) Expand :

a) $\log_4\left(\frac{16\sqrt{x+1}}{xy^{\frac{1}{3}}}\right)$

6) Review

a) Simplify : $\frac{3^{-1} - 3^{-2}}{3^{-1} + 3^{-2}}$ b)Simplify : $\left(16^{\frac{-1}{5}}\right)^{\frac{-5}{4}}$

7) Set up the problem. Solve to nearest cent

Suppose you have invested $50, 000 at 6.5% interest. SET UP an equation to help calculate the amount you would have after 3 years and 4 months if the interest is being compounded semiannually

Answers:

1) $D:(-\infty,\infty); R(-2,\infty)$ 2) D : $\{x|x>0\}; R:\{y|y \text{ is all real\#'s}\}$

3a) 49 3b) $\frac{2}{3}$ 3c) $\frac{1}{2}$ 3d) 8 3e) $\frac{4}{3}$ 3f) $3 - x^3$

4a) $\ln\left(\frac{9}{2y^3}\right)$ 4b) $\log_b\left(\frac{\sqrt{MN}}{K^4}\right)$ 4c) $\log_5\left(\frac{12x+36}{2x-3}\right)$ 5a) $2 + \frac{1}{2}\log_4(x+1) - \log_4 x - \frac{1}{3}\log_4 y$

6a) $\frac{1}{2}$ 6b) 2 7) $A = 50,000\left(1+\frac{.065}{2}\right)^{(2)\left(\frac{10}{3}\right)}$ $61, 882.86