King Fahd University of Petroleum and Minerals

Prep-Year Math Program

Math 002 - Term 151

Recitation (4.4)

Question1: If $\log 2 = x$ and $\log 6 = y$, then $\log 15 = ?$

Answer: $y - 2x + 1$

Question2: Write the logarithmic expression: $2 - \log_3 x^2 - 8\log_9 y + \log_{\sqrt{3}} xy$ as a single logarithm with a base of 3

Answer: $\log_3 \dfrac{9}{y^2}$

Question3: If $\log x = a, \log y = b$, then write the expression $\log_x \left(x^3\sqrt{y}\right)$ in terms of a and b.

Answer: $\dfrac{6a+b}{2a}$

Question4: For $x > 0,\ y > 0$, $\dfrac{2\log x + 3\log y}{2\log\sqrt{18} - \log 6} =$

a) $\log\left(\dfrac{x^2y^3}{3}\right)$ b) $\log_9\left(x^2y^3\right)$ c) $\log\left(x^2y^3 - 3\right)$

d) $\log_3\left(x^2y^3\right)$ e) $\log_{12}(6xy)$

Answer: (d) $\log_3\left(x^2y^3\right)$

Question5: If $x > 0$ *and* $y > 0$, then $-2 - 2\log_{\frac{1}{10}} y + \log x^2$ simplifies to

a) $\log\left(x^2 - y^2 - 2\right)$ b) $2\log\left(\dfrac{x}{y}\right)$ c) $\log\left(100x^2y^2\right)$

d) $\log\left(\dfrac{xy}{10}\right)^2$ e) $\log\left(x^2 - y^2 - 100\right)$

Answer: (d): $\log\left(\dfrac{xy}{10}\right)^2$