

KING FAHD UNIVERSITY OF PETROLEUM AND MINERALS
MATHEMATICAL DEPARTMENT

Math. 002

Quiz # 2 & 3

Term(042)

Name:

I.D.#

Sec.#

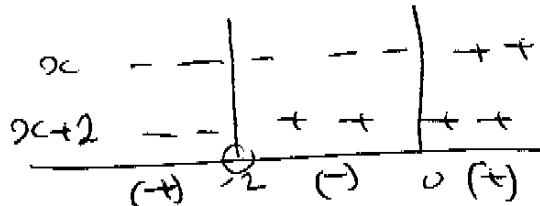
Q1. The domain of $g(x) = -3 \log_{0.3} \left(\frac{x}{x+2} \right) + 5$ is equal to:

a) $(-\infty, \infty)$

$$\frac{x}{x+2} > 0$$

critical values $0, -2$

b) $(-\infty, 0)$



c) $(-\infty, -2)$

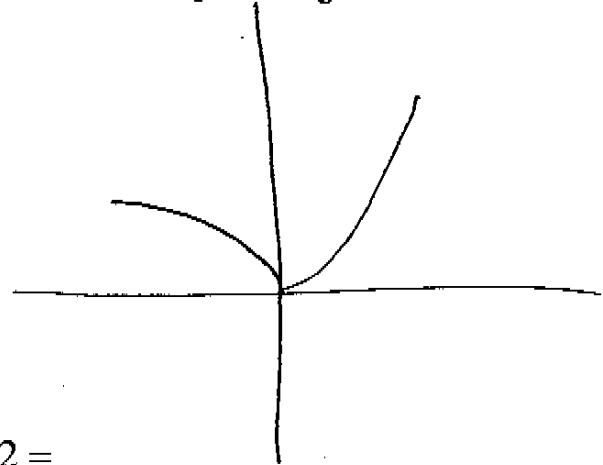
d) $(-2, \infty)$

e) $(-\infty, -2) \cup (0, \infty)$

$$D_g = (-\infty, -2) \cup (0, \infty)$$

Q2. Which one of the following functions corresponds to the adjacent figure?

a) $y = -2^{-x} + 1$



b) $y = 2^{|x-1|}$

c) $y = |2^{x-1}|$

d) $y = |2^x - 1|$

e) $y = |\ln x|$

Q3. If $\log 6 = y$ and $\log 2 = x$, then $\log_3 2 =$

a) $\frac{x}{x+1}$

$$\log_3 2 = \frac{\log 2}{\log 3} = \frac{x}{\log \frac{6}{2}}$$

b) $\frac{x}{y-x}$

$$= \frac{x}{\log 6 - \log 2} = \frac{x}{y - x}$$

c) $\frac{y}{x-y}$

d) $\frac{x}{y}$

e) $x + y$

Q4. The solution of the equation $9^x - 4 \cdot 3^x - 12 = 0$ is

a) 2

$$3^{2x} - 4 \cdot 3^x - 12 = 0$$

b) $\log_3 6$

Let $m = 3^x \Rightarrow m^2 - 4m - 12 = 0$

c) $\log_3 5$

$(m - 6)(m + 2) = 0 \Rightarrow m = 6 \text{ or } m = -2$

d) $\log_3 -2$

$m = 6 \Rightarrow 6 = 3^x \Rightarrow \log_3 6 = \log_3 3^x$

e) -2

$x = \log_3 6$

$m = -2 \Rightarrow -2 = 3^x \text{ reject } X$

Q5. The solution set of the equation $\log(2-x) + \log(5-x) = \log(37-x)$ contains

a) one negative and one positive real numbers

b) one positive integer number

c) one negative real number

d) one positive irrational number

e) no real number

$\log(2-x)(5-x) = \log(37-x)$

$(2-x)(5-x) = 37-x$

$10 - 7x - x^2 = 37 - x$

$x^2 - 6x - 27 = 0$

$(x-9)(x+3) = 0 \Rightarrow x = 9 \text{ or } x = -3$

Checking

$\times x = 9$ reject no in domain of $\log(2-x)$

$x = -3 \text{ ok.}$

Q6. The value of $\left(\log_5 16\right)\left(\log_2 \sqrt{5}\right) - (\sqrt{e})^{-2 \ln 2}$ is equal to

a) $\frac{3}{2}$

$\frac{\log_2 16}{\log_2 5} \cdot \log_2 \frac{1}{2} - \left(e^{\frac{1}{2}}\right)^{-2 \ln 2}$

b) $\frac{1}{2}$

$\frac{\log_2 4}{\log_2 5} \cdot \frac{1}{2} \log_2 5 - e^{-\ln 2}$

c) $\frac{2}{3}$

$\frac{\log_2 4}{\log_2 5} \cdot \frac{1}{2} \log_2 5 - e^{-\ln 2}$

d) 2

$2 \cdot \frac{1}{2} - e^{\frac{\ln 2}{2}} = 2 - \frac{1}{2}$

$= 2 - \frac{1}{2} = \boxed{\frac{3}{2}}$