King Fahd University of Petroleum and Minerals

Prep-Year Math Program

Math 002 - Term 132

Recitation (4.2)

Answered by S. Omar

Question 1: For the function $f(x) = -2^{|x|+1}$

1) find the x −intercept and the y −intercept

2) find whether the function is even, odd or neither.

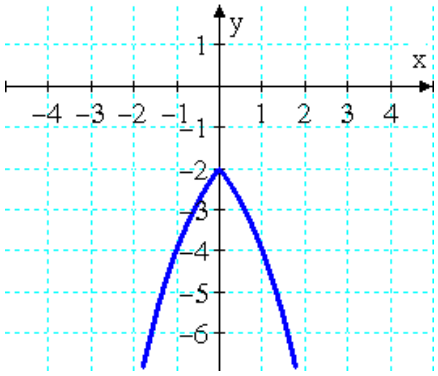
3) sketch the graph of $f(x)$ **4)** find the range

Answer: 1) The function does not have x-intercept

To find y −intercept, put $x = 0$ and find the value of y : $\Rightarrow$ $\boxed{y = -2}$

2) The function is even because: $f(-x) = -2^{|-x|+1} = -2^{|x|+1} = f(x)$

3) The graph of the function $f(x) = -2^{|x|+1} = \begin{cases} -2^{x+1} & \text{if } x \geq 0 \\ -2^{-x+1} & \text{if } x < 0 \end{cases}$ is:



4) The range is $R_f = (-\infty, -2]$

Question 2: If $f(t) = 2^{1-3t}$ is written in the form $f(t) = k\,a^t$, then find the values of a and k. **Answer:** $\boxed{k = 2}$ and $\boxed{a = \frac{1}{8}}$

Question 3: If $f(x) = a^x$ and $f(-1) = \frac{1}{2}$, then $f^{-1}(16) = ?$

a) $\frac{1}{4}$ b) 4 c) 2 d) 8 e) -2

Answer: (b): $f^{-1}(16) = 4$

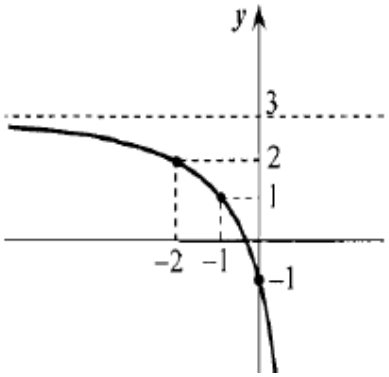
Question 4: If $(a,0)$ and $(0,b)$ are the x −and y −intercepts of the graph of $y = -4 + \left(\frac{1}{2}\right)^{x-3}$, then $a + b = ?$

a) 5 b) 7 c) 4 d) -4 e) -2

Answer: (a): $a + b = 1 + 4 = 5$

Question 5:

The adjacent figure represents the graph of



(a): $f(x) = -2^{2-x} + 3$

(b): $f(x) = -2^{x+2} + 3$

(c): $f(x) = -2^{-x} + 3$

(d): $f(x) = -2^{x+2} - 3$

(e): $f(x) = \left(\frac{1}{2}\right)^{x+1} + 3$

Answer: (b): $f(x) = -2^{x+2} + 3$