Quiz 1 Bb

Name Solution

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

List the intercepts for the graph of the equation.

1) $y^2 = x + 49$ 1) C

A) (7, 0), (0, 49), (0, −49)
B) (0, −7), (49, 0), (0, 7)
C) (0, −7), (−49, 0), (0, 7)
D) (−7, 0), (0, −49), (7, 0)

x-int ($y=0$) $x+49=0 \therefore x=-49 \rightarrow (-49,0)$
y-int ($x=0$) $y^2=49 \rightarrow y=\pm 7 \rightarrow (0,7), (0,-7)$

2) $y = \dfrac{x^2 - 64}{8x^4}$ 2) B

x-int ($y=0$) $\dfrac{x^2-64}{8x^4}=0$

A) (0, 0)
B) (−8, 0), (8, 0)
C) (0, −8), (0, 8)
D) (−64, 0), (0, 0), (64, 0)

$x^2-64=0 \therefore x=\pm 8 \rightarrow (8,0)$ and $(-8,0)$ no y-int because $x \neq 0$

Solve the problem.

3) If an object weighs m pounds at sea level, then its weight W (in pounds) at a height of h miles above sea level is given approximately by $W(h) = m\left(\dfrac{4000}{4000 + h}\right)^2$. How much will a man who weighs 165 pounds at sea level weigh on the top of a mountain which is 14,494 feet above sea level? Round to the nearest hundredth of a pound, if necessary. 3) B

A) 7.72 pounds B) 164.77 pounds C) 165.23 pounds D) 165 pounds

$h=0$ $m=165$ $W(h)=165\left(\dfrac{4000}{4000+h}\right)^2 \therefore W\left(\dfrac{14494}{5280}\right)=164.77$ pounds.
Should be in miles.

For the function, find the average rate of change of f from 1 to x:

$\dfrac{f(x) - f(1)}{x - 1}, x \neq 1$ $f(1)=\sqrt{1+35}=6$

4) $f(x) = \sqrt{x + 35}$ 4) D

A) $\dfrac{\sqrt{x+35}+6}{x+1}$ B) $\dfrac{\sqrt{x+35}+6}{x-1}$ C) $\dfrac{\sqrt{x+35}-6}{x+1}$ D) $\dfrac{\sqrt{x+35}-6}{x-1}$

Find the domain of the function.

5) $f(x) = \dfrac{x}{x^2 + 3}$ $x^2+3 \neq 0$ at any x 5) C

A) $\{x \mid x \neq -3\}$
B) $\{x \mid x > -3\}$
C) all real numbers
D) $\{x \mid x \neq 0\}$

6) $h(x) = \dfrac{x - 1}{x^3 - 64x}$

$x^3 - 64x \neq 0$ means $x(x^2 - 64) \neq 0$

means $x \neq 0, 8, -8$

A) $\{x \mid x \neq -8, 0, 8\}$

B) $\{x \mid x \neq 0\}$

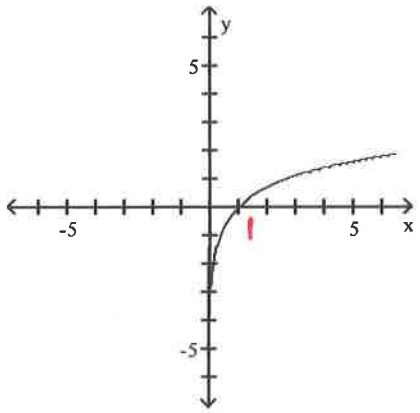
C) all real numbers

D) $\{x \mid x \neq 1\}$

6) A

Determine whether the graph is that of a function. If it is, use the graph to find its domain and range, the intercepts, if any, and any symmetry with respect to the x-axis, the y-axis, or the origin.

7)



7) C

A) function
domain: all real numbers
range: $\{y \mid y > 0\}$
intercept: (1, 0)
symmetry: none

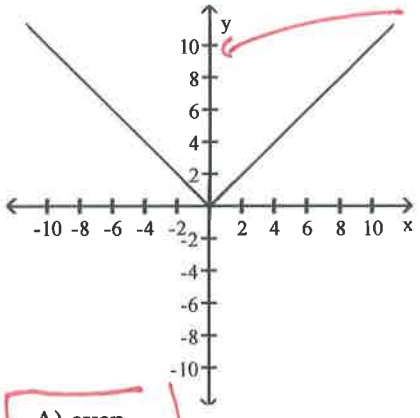
B) function
domain: $\{x \mid x > 0\}$
range: all real numbers
intercept: (0, 1)
symmetry: origin

C) function Satisfies Vertical Line Test
domain: $\{x \mid x > 0\}$ ✓
range: all real numbers ✓
intercept: (1, 0) ✓
symmetry: none ✓

D) not a function

The graph of a function is given. Decide whether it is even, odd, or neither.

8)



axis of symmetry is y-axis → even.

8) A

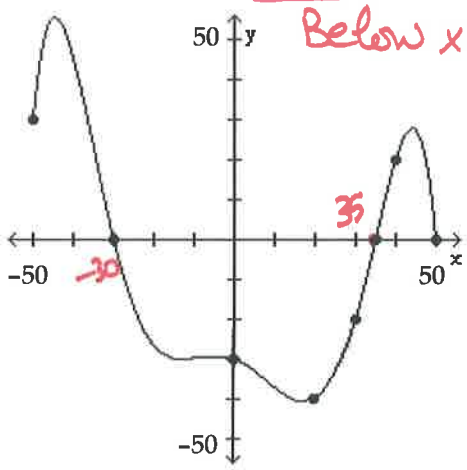
A) even

B) odd

C) neither

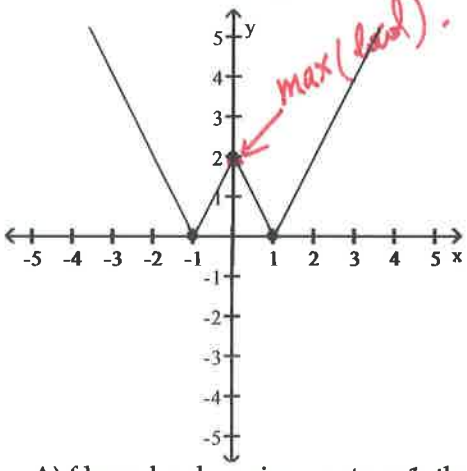
The graph of a function f is given. Use the graph to answer the question.

9) For what numbers x is f(x) < 0? 9) B



A) [–50, –30), (35, 50)
B) (–30, 35)
C) (–30, ∞)
D) (–∞, –30)

10) Find the numbers, if any, at which f has a local maximum. What are the local maxima? 10) C



A) f has a local maximum at x = 1; the local maximum is 2
B) f has a local maximum at x = –1 and 1; the local maximum is 0
C) f has a local maximum at x = 0; the local maximum is 2
D) f has no local maximum