# PRINTABLE VERSION

Quiz 9

# You scored 0 out of 100

### Ouestion I

You did not answer the question.

Find the least upper bound (if it exists) and the greatest lower bound (if it exists) for the given set.

a) Plub and alb do not exist b) lub = 5; glb = 2

c) | lub = -5; glb = -2

d)  $\frac{d}{dt} = 2$ ; glb = 5

e) # lub = 2; glb = 5

#### Ouestion 2

Question 3

You did not answer the question.

Find the least upper bound (if it exists) and the greatest lower bound (if it exists) for the set  $\{x: |x-1| < 10\}$ 

a) @ no lub; glb = 9

b) \$\mathbb{\text{lub}} = 9; glb = -11

1x-11<10 =>-10<x-1<10

c) bub = 10 : elb = -10

You did not answer the question.

Find the least upper bound (if it exists) and the greatest lower bound (if it exists) for the set  $\{-5, -\frac{9}{2}, -\frac{13}{3}, -\frac{17}{4}\}$  d)  $\Rightarrow a_n = 10$ Find the least upper bound (if it exists) and the greatest lower bound (if it exists) for the set  $\{-5, -\frac{9}{2}, -\frac{13}{3}, -\frac{17}{4}\}$  e)  $\Rightarrow a_n = -1$ Find the least upper bound (if it exists) and the greatest lower bound (if it exists) for the set  $\{-5, -\frac{9}{2}, -\frac{13}{3}, -\frac{17}{4}\}$  e)  $\Rightarrow a_n = -1$ Find the least upper bound (if it exists) and the greatest lower bound (if it exists) for the set  $\{-5, -\frac{9}{2}, -\frac{13}{3}, -\frac{17}{4}\}$  e)  $\Rightarrow a_n = -1$ Find the least upper bound (if it exists) and the greatest lower bound (if it exists) for the set  $\{-5, -\frac{9}{2}, -\frac{13}{3}, -\frac{17}{4}\}$  e)  $\Rightarrow a_n = -1$ Find the least upper bound (if it exists) and the greatest lower bound (if it exists) for the set  $\{-5, -\frac{9}{2}, -\frac{13}{3}, -\frac{17}{4}\}$  e)  $\Rightarrow a_n = -1$ Find the least upper bound (if it exists) and the greatest lower bound (if it exists) for the set  $\{-5, -\frac{9}{2}, -\frac{13}{3}, -\frac{17}{4}\}$  e)  $\Rightarrow a_n = -1$ 

as n-72 = -1-4n < -4

a) 4 + 4 = 4

b) @ lub and glb do not exist

c) 0 + 10b = -5; 0 = -6

d) 0 lub = -3 : glb = -5

e) ono lub; elb = -

 $y_4 \ln(x) > 7 \Rightarrow x > e'$   $g.1.b = e^7$ Tub DNE (which is "x")

# Question 4

You did not answer the question.

Find the least upper bound (if it exists) and the greatest lower bound (if it exists) for the set  $\{v \mid \ln(x) > 7\}$ 

a)  $40 + 100 = e^7 + 010 = 0$ 

b) and glb;  $lub = e^7$ 

c)  $m_0$  no lub; glb =  $e^{-t}$ 

d) Dub and glb do not exist

e) mo hub; glb = ln(7)

### Ouestion 5

You did not answer the question.

The first several terms of a sequence  $\{a_n\}$  are given. Assume that the pattern continues as indicated and find an explicit formula for  $a_n$ :

a)  $@a_{n} = -18(-1)^n$ 

c) 
$$(a_n = -10 (-1)^n + 10$$

$$-10(-1)^{n+1}-10$$

$$Q_{1} = 20 = 10 - (-10) = 10 + (-10)$$

$$Q_{2} = 0 = (0 + (-10)) = 10 + (-1)^{2}(-10)$$

$$Q_{3} = 20 = (0 - (-10)) = 10 + (-1)^{3}(-10)$$

$$Q_{6} = 10 + (-1)^{6}(-10)$$

### Ouestion 6

You did not answer the question.

The first several terms of a sequence  $\{a_n\}$  are given. Assume that the pattern continues as indicated and find an explicit formula for  $a_n$ .

$$\frac{-1}{(6)}$$
  $\frac{2}{(12)}$   $\frac{7}{(18)}$   $\frac{14}{(24)}$   $\frac{23}{(30)}$  ....

Top,-1, Z, 7, 14, 23 
$$\Rightarrow$$
 N-Z.

a)  $a_n = \frac{n^2 + 2}{(6n)}$  bottom 6, 12, 18, 2430  $\Rightarrow$  6N.

b) 
$$u_{n} = \frac{n^2 - 2}{(6n)}$$

$$a_{n} = \frac{(n-1)^2 - 2}{(6n)}$$

d) 
$$a_{n} = \frac{(n+1)^2 - 2}{(6n)}$$

$$e_1 = a_{n} = \frac{2n-2}{(6n)}$$

# Ouestion 7

You did not answer the question.

Determine the boundedness and monotonicity of the sequence with  $a_n$  as indicated.

$$a_n = \frac{12}{11}$$

with 
$$a_n$$
 as indicated.
$$a_n = \frac{12}{n} \qquad a_n = \frac{12}{n} > \frac{12}{n+1} = a_{n+1}$$

which is decreasing

91=12, 92=12=6 ·

7 0< n S12

m 12 =0.

- a) decreasing, bounded below by 1 and above by 12.
- h) nondecreasing; bounded below by 1 and above by 12.
- c) nonincreasing; bounded below by 0 and above by 12.
- decreasing; bounded below by 0 and above by 12.
- e) increasing; bounded below by 0 and above by 12.

# Ouestion 8

You did not answer the question.

Determine the boundedness and monotonicity of the sequence with 
$$a_n$$
 as indicated,
$$a_n = \frac{n^2}{\sqrt{n^3 + 7}} = \frac{\sqrt{4}}{\sqrt{n^3 + 7}} = \frac{P(N)}{\sqrt{N^2 + 7}}$$

You did not answer the question.

Determine the boundedness and monotonicity of the sequence with  $a_n$  as indicated.

Determine the boundedness and monotonicity of the sequence with 
$$a_n$$
 as indicated.

$$a_n = \frac{(n+9)^2}{n^2} = \frac{n+9}{n} = \frac{n$$

 $= (1 + \frac{9}{n})^2 - (1 + \frac{9}{n+1})^2$ 

 $=(1+\frac{9}{h}-1-\frac{9}{h+1})(1+\frac{9}{h}+1+\frac{1}{h+1})$ 

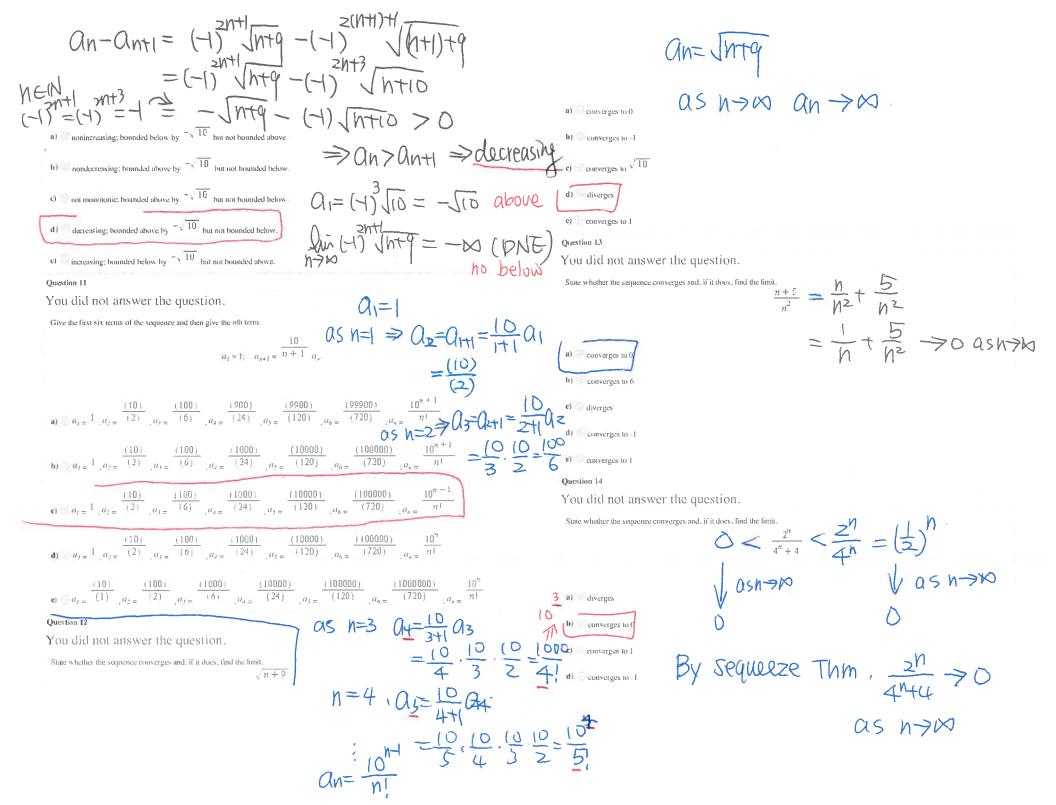
Determine the boundedness and monotonicity of the sequence with  $a_n$  as indicated,

$$a_n = (-1)^{2n+1} \sqrt{n+1}$$

$$= \left(\frac{q}{n} \frac{q}{n + 1}\right) \left(2 + \frac{q}{n + 1}\right) > 0$$
as indicated.
$$\Rightarrow 0 + 0 > 0 + 1$$

$$\Rightarrow 0 + 0 > 0 + 1$$

$$\Rightarrow 0 + 0 > 0 + 1$$



# Question 15

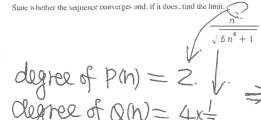
You did not answer the question.

State whether the sequence converges and, if it does, find the limit b) converges to 7  $\sqrt{as n \rightarrow x}$ c) converges to 6 d) converges to 0 V asn→M By Squeeze > Int >5 e) converges to Question 16 See tast page You did not answer the question.

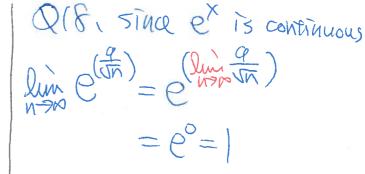
STAR PMX is continuous, we have

- a) diverges
- c) converges to ln(7/2)
- d) converges to 1
- e) converges to ln(7)

You did not answer the question.



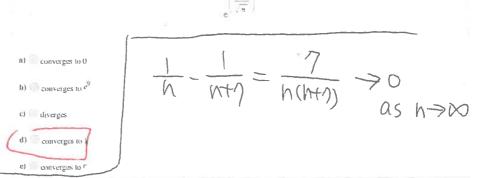
- b) converges to 1
- c) diverges
- e) converges to .?



## Question 18

You did not answer the question.

State whether the sequence converges and, if it does, find the limit



## Question 19

You did not answer the question.

State whether the sequence converges and, if it does, find the limit

$$\frac{1}{n} - \frac{1}{n \pm 7}$$

d) converges to 1

e) diverges

# Question 20

You did not answer the question.

State whether the sequence converges and, if it does, find the limit.

$$a_t = 1$$
,  $a_{n+1} = 11 \pm a_n$ 

e) converges to 10

The limit of this patter 
$$\frac{P(h)}{Q(h)}$$
 with two polynomials  $P$ ,  $Q$ . Dot the highest degree of  $P$ ,  $Q$  be  $deg(P)$ .  $deg(Q)$ , respectively.

Or  $deg(P) > deg(Q)$ ,  $\lim_{n \to \infty} \frac{P(n)}{Q(n)} = in$  (DNE).

Deg(P) =  $deg(Q)$ ,  $\lim_{n \to \infty} \frac{P(n)}{Q(n)} = \frac{deg(Q)}{deg(Q)}$  the highest term of  $P(n)$ .

Deg(P) =  $deg(Q)$ ,  $\lim_{n \to \infty} \frac{P(n)}{Q(n)} = \frac{deg(Q)}{deg(Q)}$ ,  $\lim_{n \to \infty} \frac{P(n)}{Q(n)} = 0$ .

Squeeze's rule  $g(x) \leq h(x) \leq f(x)$ If  $\lim_{x \to \infty} f(x) = L$  and  $\lim_{x \to \infty} g(x) = L$ ,

Then we have  $\lim_{x \to \infty} h(x) = L$ 

If fex is a continuous function, we have

$$\lim_{x\to\infty}f(x)=f(\lim_{x\to\infty}x).$$