eExam Question Bank

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	Question Type	Question	A	B	C	D	Answer	Remark
	FBQ	Solve lim $\left(\frac{n+1}{n\sqrt{n}}\right)$ is	0					eExam
	FBQ	Let A and B be two non-empty sets then $A \cap B = \phi$ shows that A and B are	comliment					eExam
	FBQ	Determine the number of elements in P(S), the collection of all subsets of S, if $S := \{1,2,3,4,5\}$	32					eExam
	FBQ	Given that $S := \{1-(-1)^n/n : n\epsilon N\}$, find sup S	2					eExam

☐								
☐	FBQ	Find the limit of x_n, given that $x_1 := 8$, and $x_{n+1} := \frac{1}{2}x_n + 2$, for $n \epsilon N$.	4					eExam
☐	FBQ	$lim((n!)^{1/n^2})$	1					eExam
☐	FBQ	lim $\left(\frac{(-1)^n}{n+2}\right)$ is	0					eExam
☐	FBQ	Determine the number of elements in the power set P(S), the collection of all subsets of S, for each of the set: $S := \{a, b, c, d, e, f, g, h\}$	256					eExam
☐	FBQ	Let $S : \{1, 2\}$ and $T : \{a, b, c\}$. Determine the number of different surjections from T onto S	6					eExam

☐								
☐	FBQ	If A is a set with $$m\epsilon N$$ elements and $$C \subseteq A$$ is a set with 2 elements, then A\C has how many elements	m-2					eExam
☐	FBQ	$$ 5^{2n} - 1 $$ is divisible by _____ for all $$ n\epsilon N$$	8					eExam
☐	FBQ	$$ n^{3} + (n+1)^{3} + (n+2)^{3} $$ is divisible by _____ for all $$ n\epsilon N$$	9					eExam
☐	FBQ	Find all natural numbers n such that $$ n^{2} < 2^{n}$$ will be true _____	1					eExam
☐	FBQ	Let $$g(x):= x^{2}$$ $$f(x):=x+2$$ for $$x\epsilon R$$ and let h be the composite function h:=g o f What is the inverse image $$ h^{-1}(G)$$ of $$G:= \left \{ x \epsilon R: 0 \leq x \leq 4 \right \} $$ _____ __, _____	[-4,0]					eExam
☐	FBQ	Let $$ A:=B:= \left \{x\epsilon R:-1\leq x \leq 1 \right \}$$ and consider the subset $$C:= \left \{ x^{2} + y^{2} = 1 \right \}$$ of A x B. is this set a function? Yes or No _____	No					eExam
☐	MCQ	The property of a natural numbers which states that every nonempty subset of a natural number has a least element is termed	Divergent	Convergent	dynamic	Well-ordering	D	eExam

☐								
☐	MCQ	Calculate the value of summation $$\sum_{2}^{\infty} \left (2/7 \right)^{n}$$	4/35	13/24	5/36	15/32	A	eExam
☐	MCQ	Given sequences $$ \left (1-\left (-1 \right)^{n} +1/n \right)$$ and (ii) $$ \left (sin n\pi/4 \right)$$. Which of the following is/are true about the two sequences	both sequence are convergent	(i) converge and the(ii) diverge	both sequence are not well defined	both sequence are divergent	D	eExam
☐	MCQ	find all $$ x \epsilon R$$ that satisfy the inequality 4 < |x+2|+|x-1|<5	$$\left \{ x: -3<x <-5/2 or 3/2 < x < 2 \right \}$$	$$\left \{ x: -4<x <-7/2 or 3/2 < x < 2 \right \}$$	$$\left \{ x: -3<x <-5/2 or- 6 < x < 1 \right \}$$	$$\left \{ x: -8<x <-5 or 3/2 < x < 3 \right \}$$	A	eExam
☐	MCQ	Find all $$ x \epsilon R$$ satisfying |x-1|>|x+1|	x>0	x<0	x=0	x=2	B	eExam
☐	MCQ	Find all real numbers x that satisfy the following inequality $$ x^{2} > 3x + 4 $$.	$$\left \{ x: x > 4 or x > 1 \right \}$$	$$\left \{ x: x > 4 or x <2 \right \}$$	$$\left \{ x: x < 4 or x > -1 \right \}$$	$$\left \{ x: x > 4 or x > -1 \right \}$$	D	eExam
☐	MCQ	Given that $$ S:= \left \{ 1 – (-1)^{n}/n: n\epsilon N \right \}$$, find inf S	1/2	2/3	1	2	A	eExam
☐	MCQ	Find the inf S, given that $$\left \{ x \epsilon R: x \geq 0 \right \}$$	1	2	0	4	C	eExam
☐	MCQ	The first five terms of the inductively defined sequence $$z_{1}:=1$$, $$z_{2}:=2$$, $$z_{n+2}:=(z_{n+1}+ z_{n})/(z_{n+1} - z_{n})$$	1,3,4,5,7	0,2,4,6,8	3,4,6,7,9	1,2,3,5,4	D	eExam
☐	MCQ	Find the first four terms of the sequence (x_{n}) is defined by: $$ x_{n} := 1 + (-1)^{n}$$	0,2,0,2	1,3,0,4	3,5,7,9	1,2,5,6	A	eExam
☐	MCQ	lim $$\left (\frac{\sqrt{n}-1} {\sqrt{n}+1} \right)$$	0	3	1	5	C	eExam
☐	MCQ	Let $$S: \left \{ 1,2 \right \}$$ and $$T : \left \{ a, b, c \right \}$$. Determine the number of different injections from S into T	6	10	4	7	A	eExam

☐								
☐	MCQ	Suppose that S and T are sets and that $$T \subseteq S $$, which of the following is/are 'true? (i) If S is a finite set, then T is a finite set. (ii) If T is an infinite set, then S is an infinite set, (iii) If S is a finite set, then T is a infinite set. (iv) If T is an infinite set, then S is a finite set	(i) and (iii)	(ii) and (iv)	(iii) and (iv)	(i) and (ii)	D	eExam
☐	MCQ	If A is a set with m elements and B is a set with n elements and if $$A\cap B= \phi$$, how many elements is in $$A\cup B$$.	mn	m+n	m-n	2mn	B	eExam
☐	MCQ	$$ 5^{n} - 4n - 1 $$ is divisible by _____ for all $$ n\epsilon N$$	12	15	16	23	C	eExam
☐	MCQ	Find all natural numbers n such that $$ n^{2} < 2^{n}$$ will be false	2,3,4	1,2,3	1,3,4	1,5,7	A	eExam
☐	MCQ	Given that $$ a, b\epsilon R$$ with a < b, find an explicit bijection of $$ A:= \left \{ x:a <x < b \right \}$$ onto $$B:= \left \{ y: 0 <y < 1 \right \}$$	f(x):= (x-a)/(b)	f(x):= (x-a)/(b-a)	f(x):= (a)/(b-a)	f(x):= a/b	B	eExam
☐	MCQ	Let $$g(x):= x^{2}$$ and $$f(x):=x+2$$ for $$x\epsilon R$$, and let h be the composite function h:=g o f. What is the direct image h(E) of $$E:= \left \{ x \epsilon R: 0 \leq x \leq 1 \right \} $$ _____,_____	[3,7]	[2,9]	[-5,8]	[4,9]	D	eExam
☐	MCQ	Given that x, y, z be any element of R, which of the following assertion is/are correct (i) if z!=0, then $$z^{2} > 0$$, (ii) if x > y, then x+z >= y+z (iii) if x > z, and y > 0, then xy > yz	(i) and (iii)	(ii) and (iii)	(i) and (ii)	only (iii)	A	eExam
☐	MCQ	If y and x are elements in R with y+x=x, implies y=0, and we are able to show that y=y+0 = y+(x+(-x))= (y+x) + (-x) = x + (-x) = 0, which of the following is establish by the mathematical statement?	the uniqueness of element x	negativity	the uniqueness of element y	positivity	C	eExam

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