

Domain functions			
Function signature	Description	output	File
<code>belongs(x,X)</code>	If x is an object and X a domain, it returns True if x belongs to X, and False otherwise.	bool	CC.py
<code>base(B)</code>	Returns the subdomain of the domain of an element. In other words, given a chain of domains, it returns the second one.	Domain	CC.py
<code>is_field(A)</code>	Given a domain A, it returns if A is a field.		
<code>is_prime_field(A)</code>	Given a domain A, it returns if A is a $\mathbb{Z}_n$ field.	bool	CC.py
<code>is_finite_field(A)</code>	Given a domain A, it returns if A is a finite field.	bool	CC.py
<code>is_ring(A)</code>	Given a domain A, it returns if A has a ring structure	bool	CC.py
<code>K(f)</code>	It returns the domain of the coefficients of f.	Domain	CC.py
<code>Z_</code>	The ring of integers: <code>Z_ = ZZ()</code> . Since the integers are Python integers, no type is reported: <code>73 >> Z_ ⇒ 73</code>		
<code>Q_</code>	The field of rational numbers. Examples: <code>22/7 >> Q_ ⇒ 22/7 :: Q</code> , but <code>22/7 ⇒ 3.142857142857143</code> .		
<code>domain(f)</code>	This function returns the domain of the object f. Examples: If <code>a = (5 >> Zn(12))</code> , <code>domain(a) ⇒ Z12 :: Ring</code> . If <code>[ZX,X] = polynomial_ring(Z_)</code> , <code>domain(X) ⇒ ZX :: Ring</code> . If <code>v = vector(Zn(12),[1,2,3])</code> , <code>domain(v) ⇒ Mat(Z12) :: Array</code> .		
<code>is_sub_domain(A,B)</code>	Tests whether a domain A is a sub-domain of a domain B. Examples: <code>is_sub_domain(Z_,Z_) ⇒ True</code> <code>is_sub_domain(Z_,Q_) ⇒ True</code> <code>is_sub_domain(Q_,Z_) ⇒ False</code> <code>is_sub_domain(Z_,Zn(41)) ⇒ False</code>		
<code>max_domain(A1,..., An)</code> <code>union_domain(A1,A2)</code>	If $A_1, \dots, A_n$ are domains, this function returns the smallest domain A such that $A_j \subseteq A$ for all $j = 1, \dots, n$. For $n = 2$, it is equivalent to <code>union_domain</code> .		
<code>lift(a)</code>		element	CC.py
<code>push(a,D)</code>		element	CC.py
<code>pull(a)</code>	If a is an object belonging to a domain A, $a :: A$, it returns the same element a with type $a :: A'$ where A' is the minimum subdomain of A containing a. For example, if <code>F9 = extension(Zn(3),[1,0,1])</code> and <code>a = (2 >> F9)</code> , so that $a :: F9$, <code>pull(a)</code> returns <code>2 :: Zn(3)</code> .		
<code>cardinal(A)</code>	Returns the cardinal of the object A. For example, <code>cardinal(Z_) ⇒ 'Infinity'</code> , while <code>cardinal(Zn(25)) ⇒ 25</code> .		

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dim(L) dim(L,K)	If L is an element with an attribute dim, it returns its value. Given a domain, it returns the dimension over the base domain. If two domains L and K are given, it returns the dimension of L over K.		
field(x)	It returns the minimal domain where the element x exists.		
characteristic(F)	It returns the characteristic of the domain F		
extension_base(A)	It returns the base field K of the extension chain $K \subseteq A$		
is_Zn(A)	It returns if a domain is a Z_n domain		
generator(A)	It returns the generator element of the domain A		
X_(K) Set = X_	It returns a list of all element in K.		