

1. $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$

1.2 T B $\leftarrow \bullet$ D $\leftarrow \bullet$ C $\leftarrow \bullet$ a n ($\leftarrow \bullet$) a b $\leftarrow \bullet$, b $\leftarrow \bullet$:

[illegible]

2. $\mathcal{H}_\infty$ norm

[illegible]

3. $\begin{array}{c} \blacktriangle \blacktriangle \\ \text{A} \end{array} \quad \begin{array}{c} \blacktriangle \blacktriangle \\ \text{A} \end{array}$

[illegible]

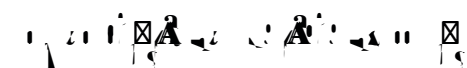
3.1.2 T

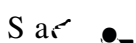
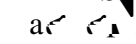
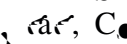
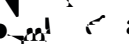
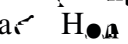
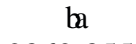
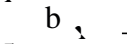
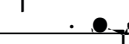
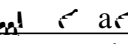
3.1.3

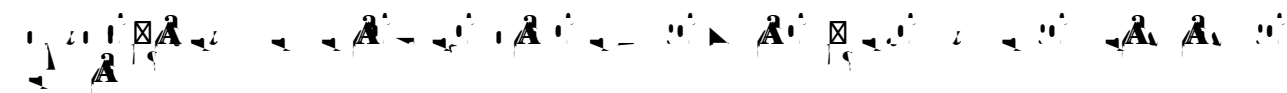
3.2 A $\mathbb{Z}$ -module M is called *free* if there is a basis B of M such that B is a linearly independent set and B is a spanning set.

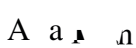
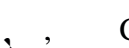
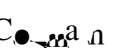
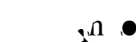
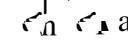
3.2.1 Theorem. Let M be a $\mathbb{Z}$ -module. Then M is free if and only if M is isomorphic to a direct sum of copies of $\mathbb{Z}$.

3.1 

3.1.1 

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 2862 8555,  a  /  b  a
 17M F. H. C. , 183 Q. n'
 R. Ea , a n a, H. K. .

3.1.2 

A a n a  , C. a n  a n  a n n  , n
 C. a n . S a  a b  n n  C. a n  a n n