

# Problem Set 10

Engineering 3422, 2005

To do for Nov 22

## Q0

(a) Prove or find a counter-example:

- For all relations  $R$  such that  $\text{dom}(R) = \text{rng}(R)$ , and all  $m, n \in \mathbb{N}$ ,  $R^{m+n} = R^m \circ R^n$ .

(b) Prove or find a counter-example:

- For all relations  $R$  such that  $\text{dom}(R) = \text{rng}(R)$ ,  $R^{-1} \circ R^1 = R^0$ .

**Q1** Consider a database table  $M$  associating marks with student numbers, e.g.

	num	grade	
$M :$	1	99	,
	2	80	
	3	75	

and a database table  $S$  associating student numbers with names, e.g.

	num	name	
$S :$	1	'Steerpike'	.
	2	'Fuschia'	
	3	'Titus'	

We need to compute a list of the names and numbers of all students with marks of 80 or more, e.g.

	num	name	
	1	'Steerpike'	.
	2	'Fuschia'	

Give a query to compute this table, using the query operators presented in class.