

1. Give values so that the table represents an invertible function

$m$	1	2	3	4	5
$f(m)$	0.09	_____	_____	7.80	9.40

2. For what values of  $A$  and  $K$  will  $S(t) = At^3 - K$  be a one-to-one function?

3. Determine if the following functions are invertible. Give reasons for your answers.

A.  $f(d)$  is the amount of sales tax on an item of clothing that sells for  $d$  dollars.

B.  $g(t)$  is the number of students waiting in line at the UA Catcard Office on the first day of classes as a function of time (since the office opened that morning).

4. The life expectancy,  $L$ , of a child can be modeled by the function below. The variable  $y$  is the year of birth in relationship to 1980. For example,  $y = 0$  corresponds to 1980.

$$L(y) = \frac{y + 96.94}{0.01y + 1.3}$$

A. Give a practical interpretation of  $L(10)$ . Find the value of  $L(10)$

B. Give a practical interpretation of  $L^{-1}(78)$ . Use algebra to find the value of  $L^{-1}(78)$ .

5. Let  $f(x) = \frac{x}{1+x^2}$  and  $g(x) = \frac{1}{x+1}$ . Find  $f(g(x))$  and  $g(f(x))$ . Simplify completely.

6. Use the numerical representation of  $f(x)$  below to match the numerical information in column A with the symbolic representation in column B.

$x$	-4	-2	0	2	4
$f(x)$	5	1	6	2	7

**Column A**

$x$	-4	-2	0	2	4
$g(x)$	7	3	8	4	9

$x$	-2	-1	0	1	2
$h(x)$	5	1	6	2	7

$x$	-2	0	2	4	6
$k(x)$	5	1	6	2	7

$x$	-8	-4	0	4	8
$m(x)$	5	1	6	2	7

$x$	-4	-2	0	2	4
$n(x)$	-5	-1	-6	-2	-7

$x$	4	2	0	-2	-4
$p(x)$	5	1	6	2	7

$x$	7	5	3	1	-1
$q(x)$	11	6	10	5	9

**Column B**

(i)  $f(x-2)$

(ii)  $f\left(\frac{1}{2}x\right)$

(iii)  $f(x)+2$

(iv)  $f(-x)$

(v)  $f(x-3)+4$

(vi)  $-f(x)$

(vii)  $f(x+2)$

(viii)  $f(2x)$