Chapter 1

5.) awd

15.) awd

Chapter 2

7.)
1. Let a and b be odd integers, thus there exist $m, n \in \mathbb{Z}$ where $a = 2m + 1$ and $b = 2n+1$. We can see that $a+b = 2m+1+2n+1 = 2m+2n+2 = 2(m+n+1)$, which is even, thus the odd integers are not closed under addition, and thus are not a group under addition.
2. For the sake of establishing a contradiction, let a and b be odd integers where $a + b = a$, thus for some $m, n \in \mathbb{Z}$:
$$2m + 1 + 2n + 1 = 2m + 2n + 2 = 2m + 1$$
$$\implies 2n + 1 = 0 \implies 2n = -1 \implies n = -\frac{1}{2}$$
Thus $n \notin \mathbb{Z}$. $\Rightarrow\Leftarrow$ Thus no such a, b exist in the odd integers, thus the odd integers lack an identity element under addition, and thus are not a group under addition.

14.)
1. $(ab)^3 = (ab)(ab)(ab) = ababab$
2. $(ab^{-2}c)^{-2} = (ab^{-2}c)^{-1}(ab^{-2}c)^{-1} = (c^{-1}b^2a^{-1})(c^{-1}b^2a^{-1}) = c^{-1}b^2a^{-1}c^{-1}b^2a^{-1}$

33.)

	e	a	b	c	d
e	e	a	b	c	d
a	a	b	c	d	e
b	b	c	d	e	a
c	c	d	e	a	b
d	d	e	a	b	c