

Math 180 Homework 2

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Due January 26th

1

Draw the following graphs:

- (1) The claw graph $C = (\{1, 2, 3, 4\}, \{a, b, c\}, \varphi)$ where φ is given by

a	b	c
$\{1, 2\}$	$\{1, 3\}$	$\{1, 4\}$

- (2) The paw graph $P = (\{1, 2, 3, 4\}, \{a, b, c, d\}, \varphi)$ where φ is given by

a	b	c	d
$\{1, 2\}$	$\{1, 3\}$	$\{1, 4\}$	$\{2, 3\}$

- (3) The bull graph $B = (\{1, 2, 3, 4, 5\}, \{a, b, c, d, e\}, \varphi)$ where φ is given by

a	b	c	d	e
$\{1, 2\}$	$\{1, 3\}$	$\{1, 4\}$	$\{2, 3\}$	$\{2, 5\}$

2

Section 4.1, exercise 1

3

How many automorphisms do the following graphs have?

4

Section 4.2, exercise 1

5

Section 4.3, exercise 7

6

Section 4.3, exercise 9

7

Prove that graph isomorphism is an equivalence relation.