

Faculty of Engineering and Design
Carleton University
Midterm Examination II - March 2014.

Date: March 16, 2014

No of Students: 935

Time: 90 minutes

Course: ECOR 1101 Engineering Mechanics: Sections B, C, D, E & F.

Department: Civil and Environmental Engineering

Course Instructors: Professors Salinas, Sarkar, Sivathayalan, and Vandenberg

Authorized Memoranda

Calculator ONLY.

(Programmable calculators with less than 4MB RAM permitted).

(Handheld computers, Cellphones, Smartphones etc. not permitted)

Instructions:

1. Write your name, student number and place your signature in the space provided below.
2. Circle your lecture section and P/A class section in the table below.
3. This examination has SIX pages. Make sure you have all the pages.
4. Answer ALL Questions.

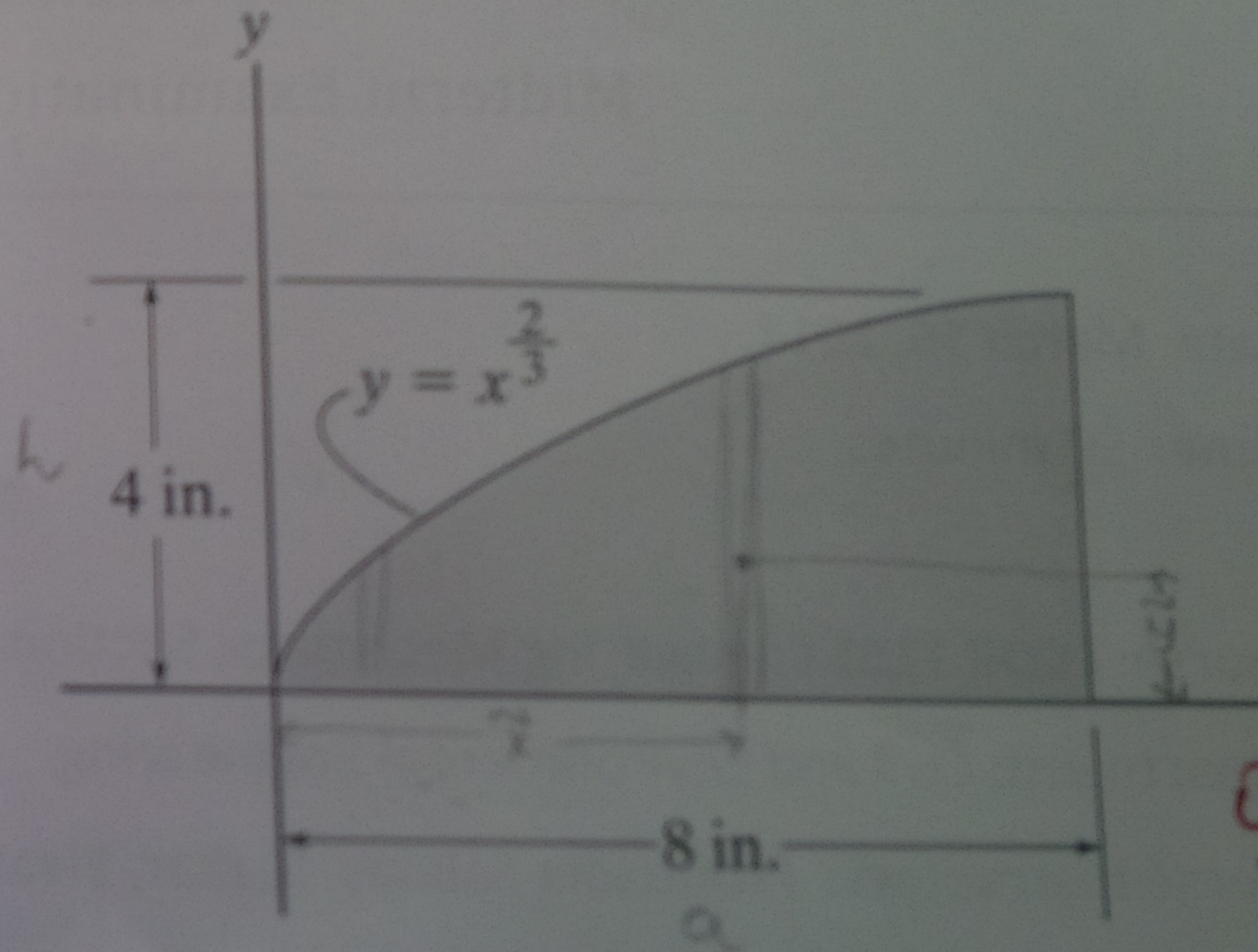
$$\bar{y} = \frac{3h}{10}$$

$$\text{area} = \frac{ah}{3}$$

$$\bar{x} = \frac{3a}{4}$$

Q1. Locate the y-coordinate of the centroid for the area shown.

$$C_{1A} = C^2$$



ng and Design

ersity

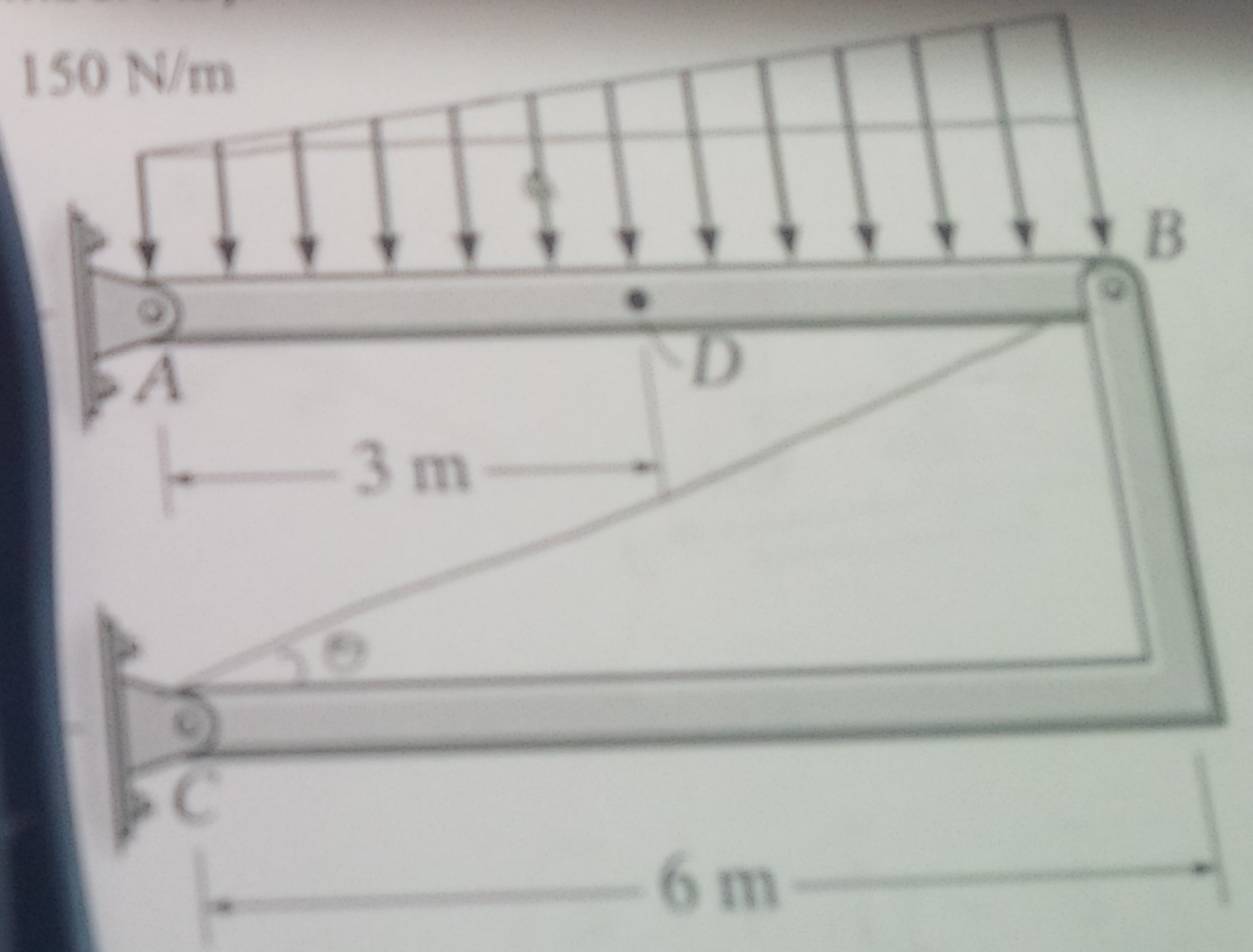
February 2014.

No of Students: 935

Instructions:

1. Write your name, student number
2. Circle your lecture section and
3. This examination has SIX pages

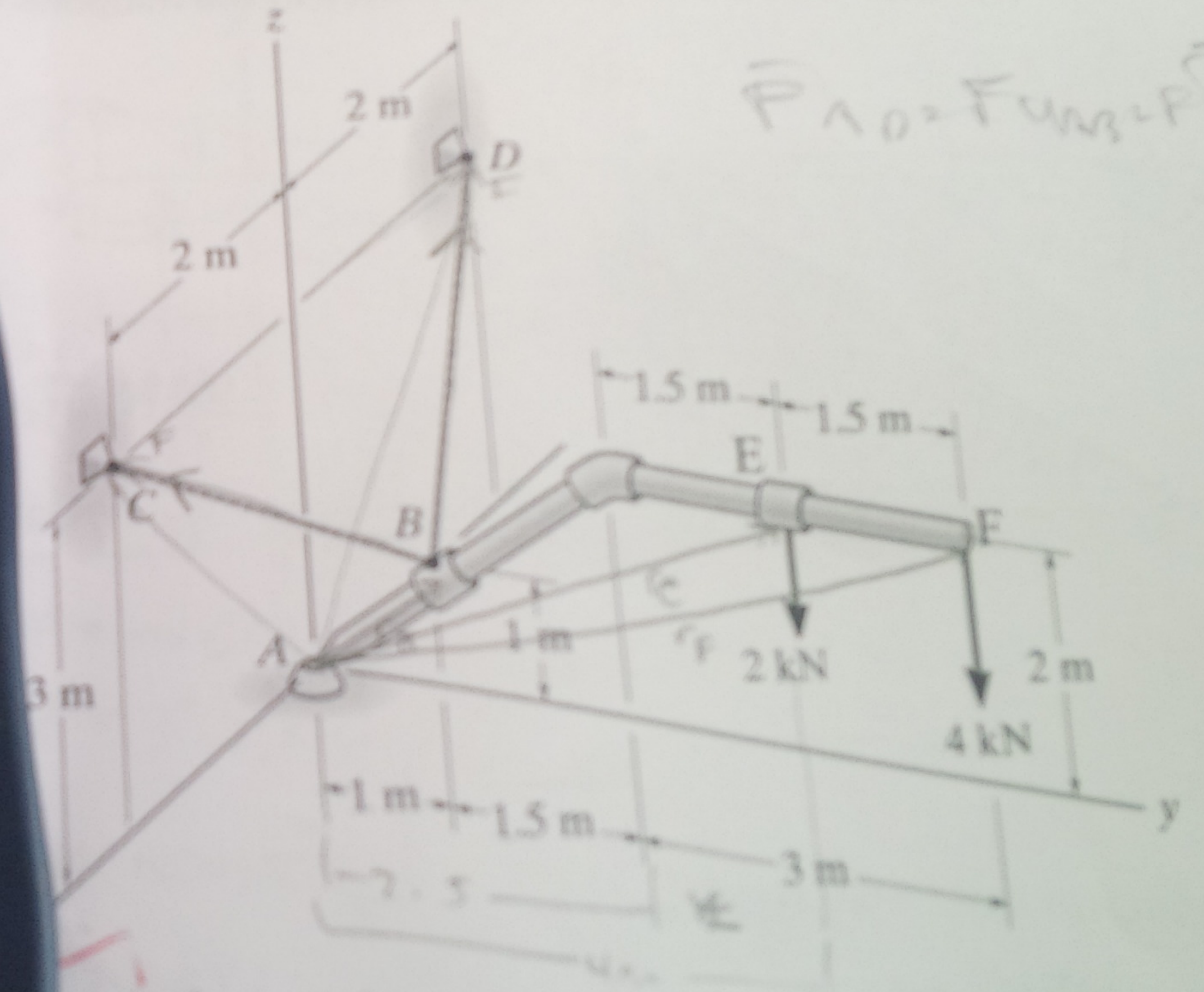
Q2. By using appropriate free body diagrams, determine the
(i) support reactions at the pin supports at A and C.
(ii) internal forces at point D (located at the midpoint of member AB).



$\tan \theta = \dots$

1. Write your name, student number and place your signature in the space provided below.
2. Circle your lecture section and P/A class section in the table below.
3. This examination has SIX pages. Make sure you have all the pages.

Q3. A frame, supported by a ball-and-socket at A and two cables at B, is subjected to two vertical forces at E and F as shown in the figure. Determine the tension in the cables, and the support reaction at A.



$$P_{AD} = F_{CD} = P \frac{\sqrt{AD}}{11A_2}$$

