

Dawson College Department of Mathematics

Instructor: M. Ishii

201-941-DW Engineering Math I

Name:

ANSWERS

Fall 2019

Time Limit: 3 hours

- Each question is worth 10 marks, and all lengths are in millimeters. Keep 4 decimal places.

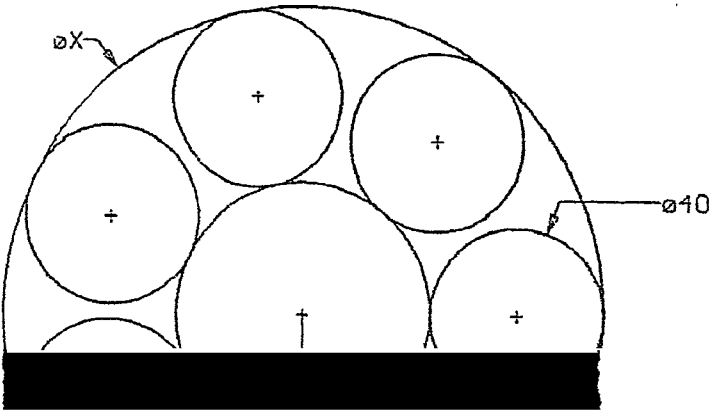
Problem	Points	Score
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1. Solve the following systems using Gauss-Jordan Elimination:

(2) (5 marks) Solve the following system:

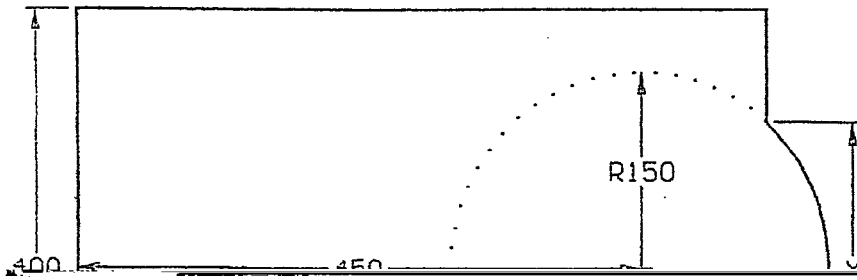
$$\begin{cases} 3x - 4y + 4z = 7 \\ x - y - 2z = 2 \end{cases}$$

2. (10 marks) Find the diameter X and clearance Y.



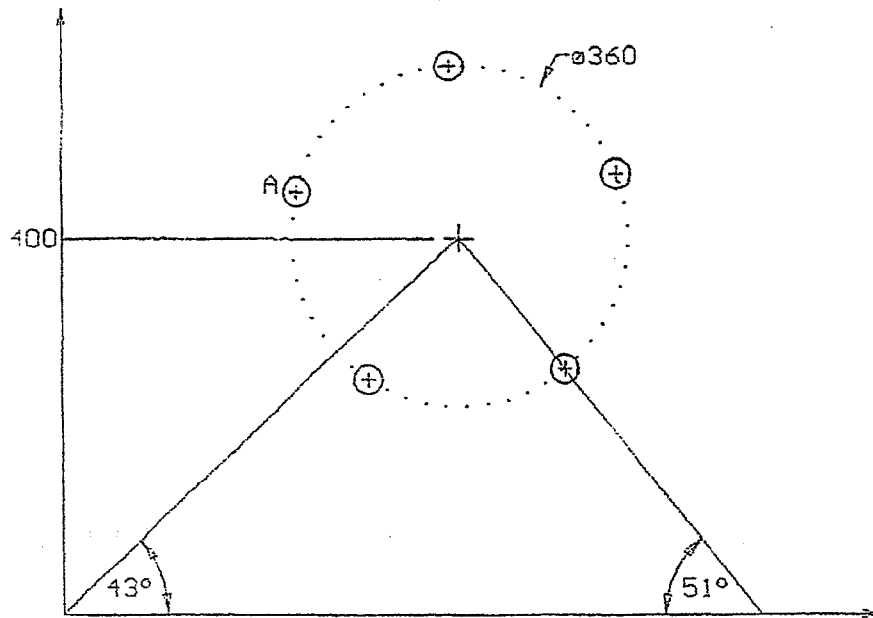
2. (10 marks) Find the length of the curve  $y = \frac{1}{2}x^2 + \frac{1}{3}x^3$  from  $x = 0$  to  $x = 2$ .

4. (10 marks) Find the lengths X and Y, AND find the area of the baseplate.



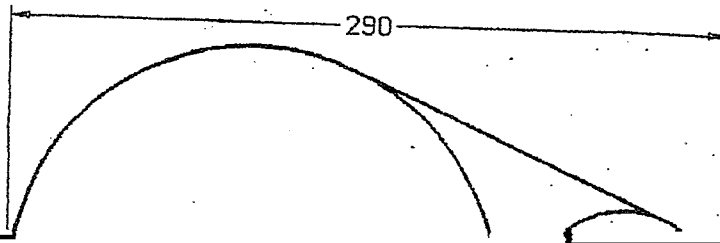
$X = 50 \text{ mm}$   
 $Y = 100 \text{ mm}$

5. (10 marks) Find the coordinates of point A:

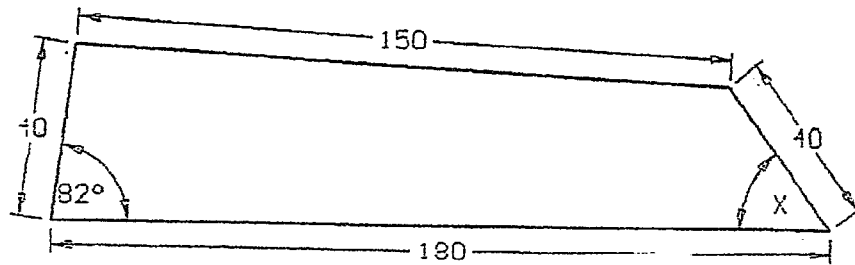


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6. (10 marks) Find the beltlength.



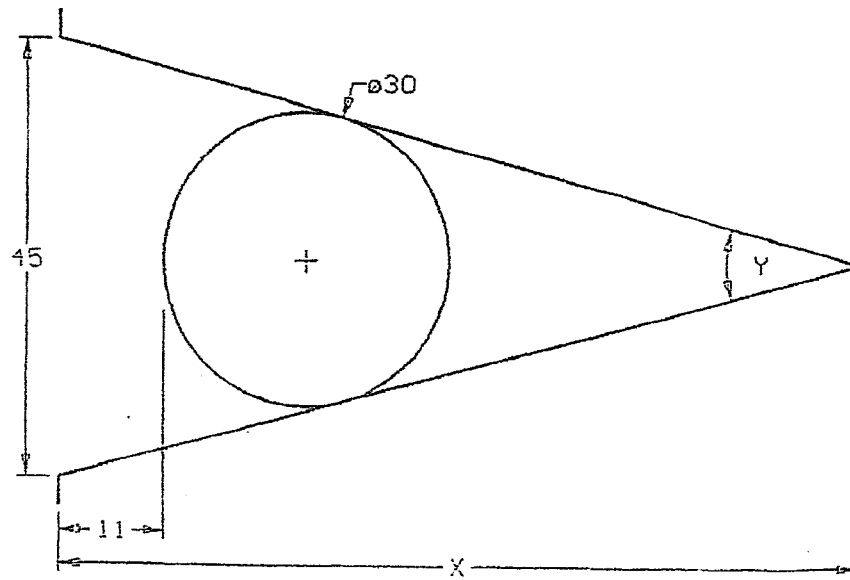
7. (10 marks) Find the angle X:



$$X = 51.9526^\circ$$



8. (10 marks) Find the values of X and Y:



$$X = 83.9274 \text{ mm}$$

$$Y = 30.0149^\circ$$

9. (a) (5 marks) Find the radius and center of the circle with equation:  $x^2 + y^2 - 6x + 10y = 0$

Radius = 5  
Center = (3, -5)

(b) (5 marks) Simplify, with only positive exponents:  $(5z)^{-1}x^{-2}y^3$

10. Solve the following equations for  $x$ :

(a) (5 marks)  $\log(x + 5) + \log(x + 2) = \log(x + 6)$

$$x = -0.7639$$

(b) (5 marks)  $\frac{2x}{x-1} + \frac{x-5}{x-2} = 1$

$$x = -4$$