

Math 191-DX01
Assignment 8

Deadline: Fri Dec 11, 2:30pm Pacific Time
Submit on D2L or email HowardL@camosun.ca

Number of Questions: 6
Total Marks: 18

Show all your work for full marks.

You MAY use the course website (notes, videos etc)

You may NOT copy from others (classmates, tutors, Chegg etc)

Submit jpg or pdf files

Feel free to handwrite your solutions and take photos of your work

Covers Sections 26.3, 26.4, 26.6, 16.1-16.5

1. [3 marks] Revolve the region bounded by $y = x^2$, $y = 0$ and $x = 3$ about the y -axis. Find the volume of the solid.

2. [3 marks] The region bounded by $y = -2x$, $y = \sqrt{x}$ and $y = 4$ has area = $\frac{76}{3}$. Find \bar{y} .

3. [2 marks] During launch, a rocket's weight decreases due to consumed fuel. Let x be a rocket's altitude (in km). A certain rocket's weight (in N) is $400,000 - 8,000x$.

How much work is done in lifting this rocket from the ground to an altitude of 20 km?

4. [4 marks] Let $A = \begin{bmatrix} 1 & 3 \\ -7 & 6 \end{bmatrix}$, $B = \begin{bmatrix} 4 & 5 \\ 8 & -9 \end{bmatrix}$ and $C = \begin{bmatrix} 2 & -2 & 3 \\ 4 & 5 & -6 \end{bmatrix}$.

Find:

a) $2A - 3B$

b) BC

5. [3 marks] Solve using A^{-1} :

$$3x - 4y = -37$$

$$2x + 7y = 188$$

6. [3 marks] Solve using Gauss-Jordan Elimination. Your answer will involve the unknown constant c .

$$x - 3y + 4z = 22$$

$$-x + 4y + 2z = 45$$

$$3x + 3y + 85z = 870 + c$$