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|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|  | <p>KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN<br/><b>UNIVERSITAS NEGERI SEMARANG</b><br/>Gedung H, Kampus Sekaran, Gunungpati, Semarang 50229<br/>Telepon +6224-8508091, 8508092, 33149439; Faximile. +6224-850808<br/>Laman: <a href="http://www.unnes.ac.id">http://www.unnes.ac.id</a>, Email: rektor@mail.unnes.ac.id</p> |                            |                                              |  <p>UKAS<br/>MANAGEMENT<br/>SYSTEMS<br/>ISO 9001</p> <p>URS is a member of Registrar of Standards (Holdings) Ltd.</p> |                            |
|                                                                                   | <p><b>FORMULIR<br/>SOAL UJIAN</b></p>                                                                                                                                                                                                                                                                                    |                            |                                              |                                                                                                                                                                                                          |                            |
| <p><b>No. Dokumen</b><br/>FM-02-AKD-22</p>                                        | <p><b>No. Revisi</b> 02</p>                                                                                                                                                                                                                                                                                              | <p><b>Hal</b> 1 dari 1</p> | <p><b>Tanggal Terbit</b><br/>1 Juni 2016</p> | <p><b>Review KAJUR/Kaprodi</b></p>                                                                                                                                                                       |                            |
|                                                                                   |                                                                                                                                                                                                                                                                                                                          |                            |                                              | <p><b>Tgl</b></p>                                                                                                                                                                                        | <p><b>Tanda Tangan</b></p> |

**PANITIA UJIAN AKHIR SEMESTER**  
**TAHUN AJARAN 2021/2022**  
**FAKULTAS TEKNIK**

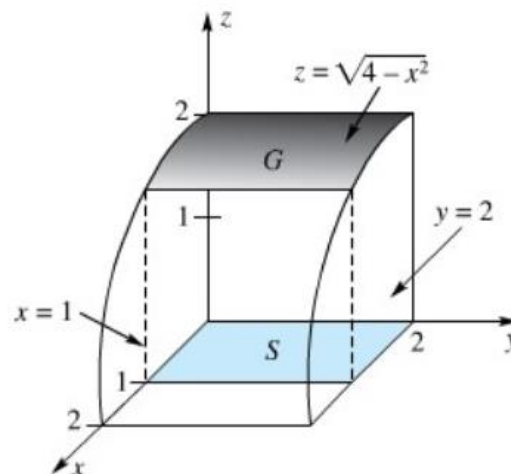
Nama Mata Kuliah : Kalkulus II  
 SKS : 3 SKS  
 Semester/Tahun : Genap 2021/2022  
 Prodi/Jurusan : Teknik Komputer/Teknik Elektro  
 Pengampu : 1. Dr. Djoko Adi Widodo, M.T.  
                   2. Uswatun Hasanah, S.Kom., M.Eng.  
 Hari/Tanggal : Selasa, 07 Juni 2022  
 Waktu : 120 menit

**Petunjuk pengerjaan UAS:**

1. Sifat ujian buku terbuka dan dikerjakan secara individu
2. File jawaban discan dalam bentuk PDF dan disubmit melalui Elena

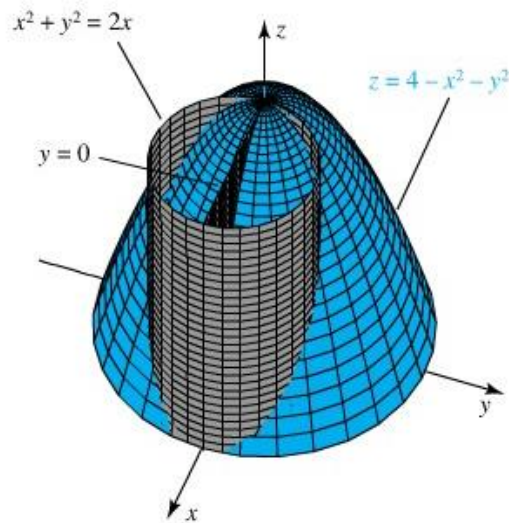
**Soal Ujian:**

1. If  $S$  is the rectangular region in the  $xy$ -plane that is bounded by the lines  $x = 0, x = 1, y = 0$ , and  $y = 2$ , find the area of the part of the cylindrical surface  $z = \sqrt{4 - x^2}$  that projects onto  $S$ .



2. Find the volume of the solid region  $S$  in the first octant bounded above by the paraboloid  $z = 4 - x^2 - y^2$ , and laterally by the cylinder  $x^2 + y^2 = 2x$ .

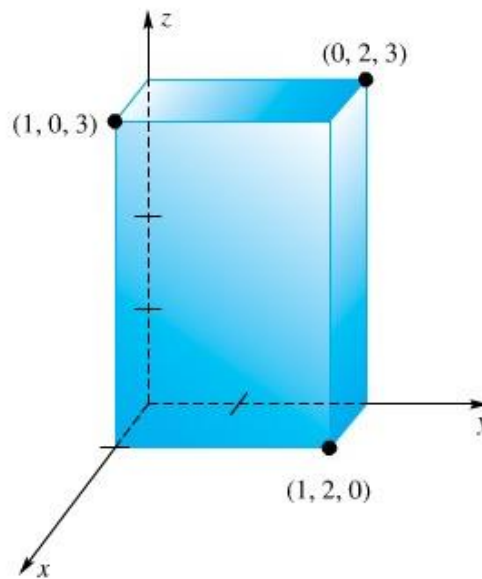
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| <br><b>UNNES</b><br><small>UNIVERSITAS NEGERI SEMARANG</small> | <b>KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN</b><br><b>UNIVERSITAS NEGERI SEMARANG</b><br>Gedung H, Kampus Sekaran, Gunungpati, Semarang 50229<br>Telepon +6224-8508091, 8508092, 33149439; Faximile. +6224-850808<br>Laman: <a href="http://www.unnes.ac.id">http://www.unnes.ac.id</a> , Email: rektor@mail.unnes.ac.id |                     |                                      | <br><small>UKAS is a member of Registrar of Standards (Holdings) Ltd.</small> |                     |
|                                                                                                                                                 | <b>FORMULIR<br/>SOAL UJIAN</b>                                                                                                                                                                                                                                                                                        |                     |                                      |                                                                                                                                                                  |                     |
| <b>No. Dokumen</b><br>FM-02-AKD-22                                                                                                              | <b>No. Revisi</b> 02                                                                                                                                                                                                                                                                                                  | <b>Hal</b> 1 dari 1 | <b>Tanggal Terbit</b><br>1 Juni 2016 | <b>Review Kajor/Kaprodi</b><br><b>Tgl</b>                                                                                                                        | <b>Tanda Tangan</b> |



3. Compute the flux of the vector field  $\mathbf{F} = x^2y \mathbf{i} + 2xz \mathbf{j} + yz^3 \mathbf{k}$  across the surface of the rectangular solid  $S$  determined by:

$$0 \leq x \leq 1, \quad 0 \leq y \leq 2, \quad 0 \leq z \leq 3$$

- (a) By a direct method, and  
 (b) By Gauss's Theorem



*Selamat mengerjakan, semoga kesuksesan selalu menyertai Anda*