

Name: \_\_\_\_\_

**Calculus 251:C3    Quiz #24 - 7/19/2021    Topic: Section 16.6**

**Instructions.** Answer the questions in the spaces provided or on your own paper, then scan and upload to Canvas. Show and label all of your work. Responses with no work may receive no credit even if the answer is correct.

10 pts

- (1) Let  $\mathcal{S}$  be the part of the surface  $x^2 + y^2 + z^2 = 25$  above the plane  $z = 3$  oriented with outward-pointing normal. Let  $\vec{F} = \langle z, z, 2 \rangle$ . Compute the flux of  $\vec{F}$  through  $\mathcal{S}$ .

*Hint:* You can reasonably do this question using any of the three typical parametrizations. One of them has a complication in the setup, one has a complication in the integration, but any of them should work. Remember what I said about changing coordinate systems after computing the normal should you decide to do that!