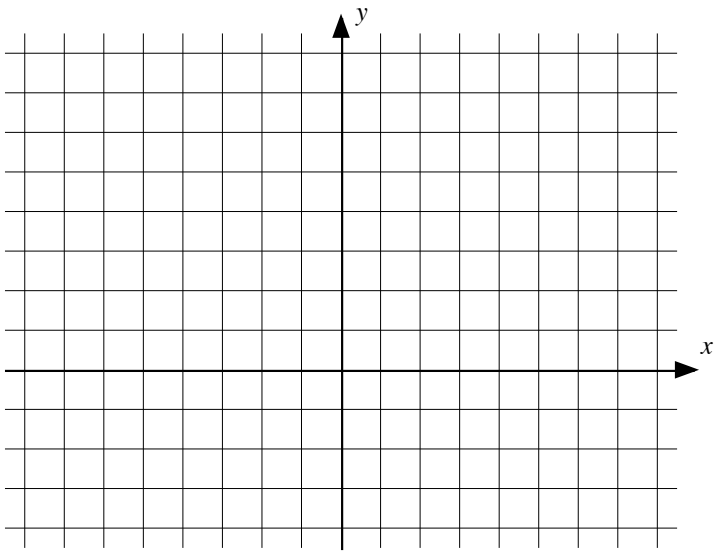
Quiz #8

1. **(a)** **(1 point)** Use the axes given below to draw an accurate sketch of the region of the *xy*-plane that is bounded by the curves: $y = 2$ and $y = \frac{1}{2}x^2$.



(b) **(2 points)** Set up an integral that will give the amount of volume that lies below the plane:

$$3x + 2y - z = 0,$$

when the region of integration is the region described in Part (a).

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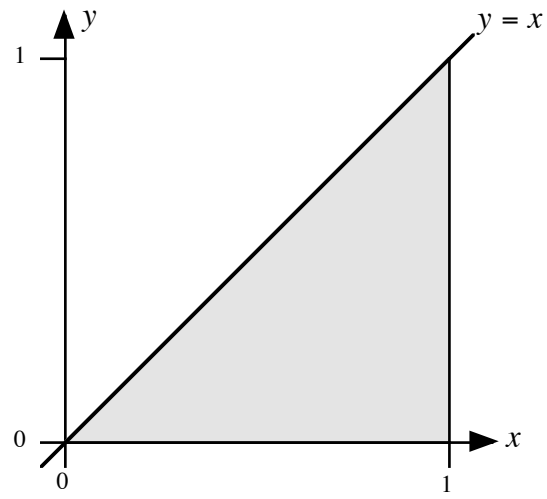
(c) **(2 points)** Evaluate the integral that you set up in Part (b) to calculate the volume beneath the plane. Show all of your work. You should **not use a calculator** in this part of the problem for anything besides simple arithmetic.

2. **(3 points)** Evaluate the following double integral:

$$\int_0^1 \int_y^1 e^{-x^2}\, dx dy .$$

Show all of your work. NO WORK = NO CREDIT. You should **not use a calculator** in this part of the problem for anything besides simple arithmetic.

NOTE: The diagram given below shows the region of integration for this particular double integral (it is shaded).



3. **(2 points)** Evaluate the following double integral:

$$\int_0^1 \int_{\sqrt{y}}^1 \cos\left(x^3\right) dx dy .$$

Show all of your work. NO WORK = NO CREDIT. You should **not use a calculator** in this part of the problem for anything besides simple arithmetic.

NOTE: The diagram given below shows the region of integration for this particular double integral (it is shaded).