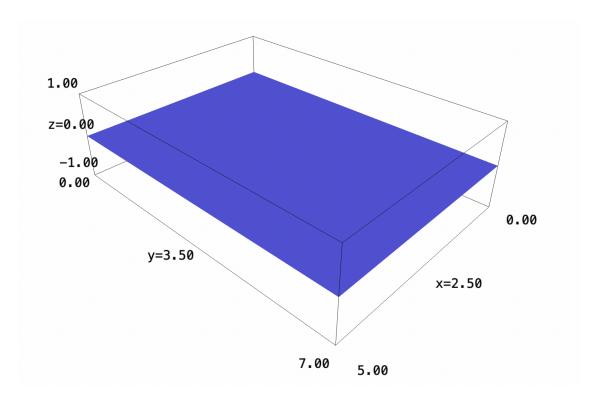
MVC 2 PS#25 Demo Compiled May 1, 2022

1 | Rectangle

f(x) = 0plot3d(f, (x,0,5), (y,0,7))



$$dA = \sqrt{1} = 1 \tag{1}$$

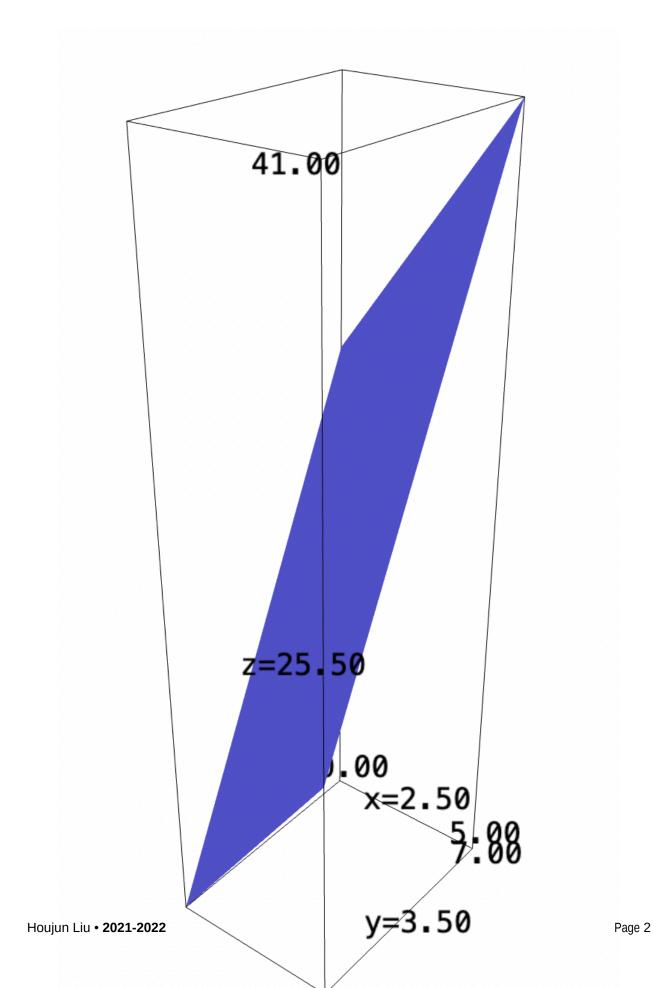
$$\iint_{V} 1 dV \tag{2}$$

$$\Rightarrow \int_0^5 \int_0^7 1 dx \, dy \tag{3}$$

 \Rightarrow 35 (4)

2 | Area of a Plane

f(x,y) = 2*x+3*y+10plot3d(f, (x,0,5), (y,0,7))



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$$dA = \sqrt{1 + \left(\frac{\partial f}{\partial x}\right)^2 + \left(\frac{\partial f}{\partial y}\right)^2} dV \tag{5}$$

$$= \sqrt{1 + 2^2 + 3^2} dV \tag{6}$$

$$=\sqrt{1+4+9}dV\tag{7}$$

$$=\sqrt{14}dV\tag{8}$$

$$\iint_{V} \sqrt{14}dV \tag{9}$$

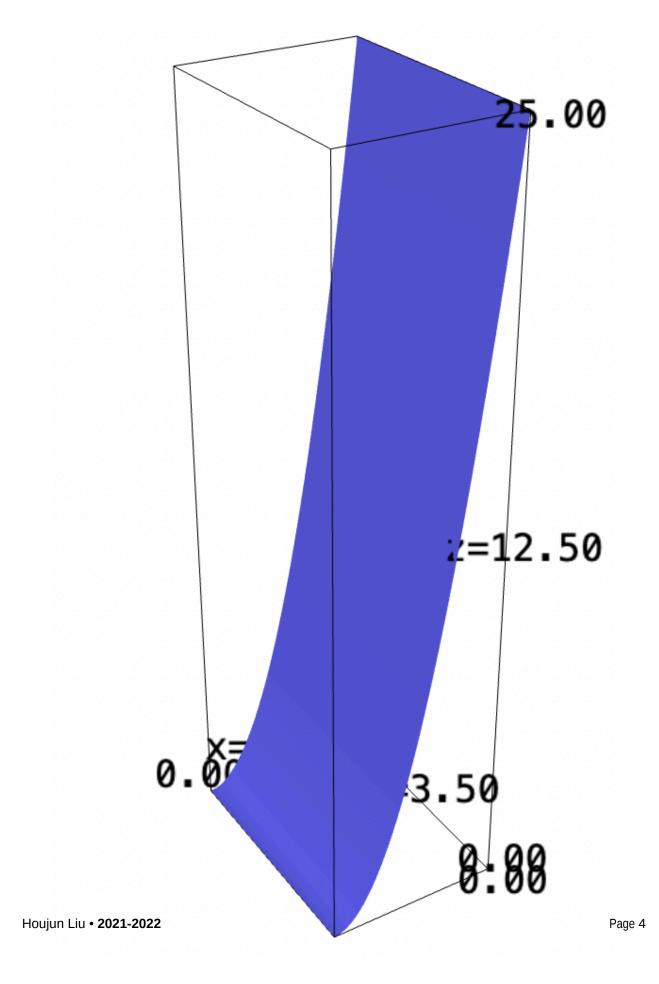
$$\iint_{V} \sqrt{14} dV \tag{9}$$

$$\Rightarrow \int_{0}^{5} \int_{0}^{7} \sqrt{14} dx dy \tag{10}$$

$$\Rightarrow 35\sqrt{14} \tag{11}$$

3 | Parabola

 $f(x,y) = x^2$ plot3d(f, (x,0,5), (y,0,7)) MVC 2 PS#25 Demo Compiled May 1, 2022



$$dA = \sqrt{1 + \left(\frac{\partial f}{\partial x}\right)^2 + \left(\frac{\partial f}{\partial y}\right)^2} dV$$

$$= \sqrt{1 + (2x)^2} dV$$
(12)

$$= \sqrt{1 + (2x)^2} dV {13}$$

$$=\sqrt{1+4x^2}dV\tag{14}$$