

Exam II Answers
Math 126 F Autumn 2018

1. (a) (4 points) $\frac{\partial z}{\partial x} = \frac{2y - 8x}{y^2}$ and $\frac{\partial z}{\partial y} = \frac{2x - 2yz + 3y^2}{y^2}$

(b) (4 points) $z = -(x - 3) + \frac{3}{8}(y - 4) + 6$

2. absolute max = 2 (occurs at (0, 1)) and absolute min = $-\frac{1}{54}$ (occurs at $(\frac{1}{3}, \frac{1}{6})$)

3. $V = \int_0^2 \int_{y/2}^y 8x + 2y \, dx \, dy$

4. $m = \int_{\pi/8}^{5\pi/8} \int_0^{\sin(2\theta) - \cos(2\theta)} 3r^2 \, dr \, d\theta$

5. $\int_0^9 \int_{\sqrt{x}}^3 \cos(\pi y^3) \, dy \, dx = \int_0^3 \int_0^{y^2} \cos(\pi y^3) \, dx \, dy = 0$

6. $\iint_D 6y \, dA = \int_0^{\pi/3} \int_2^{4 \cos \theta} 6r^2 \sin \theta \, dr \, d\theta = 22$