

1 MATH 251

SAMPLE EXAM 2 - Answers

1. $\max f = 5, \min f = 4$

2. (b)

$$\int_0^9 \int_0^{\sqrt{x}} f(x, y) \, dy \, dx$$

3. 8π

4.

$$\int_0^{\pi/2} \int_0^1 \int_{r^2}^r r^3 z \cos \theta \sin \theta \, dz \, dr \, d\theta$$

5. (b) $15\sqrt{2}/2$

6. $45/2$

7. $-96/5$

8. $\int_0^{\pi/2} \int_0^{\pi/2} \int_0^3 \rho^4 \sin \phi \, d\rho \, d\phi \, d\theta$

9. $\max f = 18, \min f = -\frac{1}{4}$

10. $\frac{1}{4} \sin 81$

11. $\frac{27}{2}$

12. $\pi/24$

13. 32π

14. (b) π^2

15. $1/3$

16. 8π

17. 512π

18. dimensions: $L = 1, W = 2, H = 2$, volume $V = 4$

19. 4.5π

20. $(\frac{9}{2\pi}, \frac{9}{2\pi})$

21. $\frac{40\pi}{3}$