

Calculus 3 Final Examination Sample 2 - ANSWERS
courtesy of Dr. Inna Sysoeva, University of Pittsburgh, adapted

Problem 1. a) $\frac{2}{\sqrt{5}}$

b) $< \frac{4}{5}, \frac{3}{5} >$ (or $< 4, 3 >$)

Problem 2. a) $\frac{5}{27}$

b) $\int_0^2 \sqrt{(3t^2 + t)^2 + 4 + (2t + \sqrt{5})^2} dt$

Problem 3. $(x - 2) + (y - 2) + 2(z - 1) = 0$

Problem 4. $(1, 2)$ - saddle point

Problem 5. 4

Problem 6. $\frac{5\pi}{3}$

Problem 7. a) conservative;

b) 4

Problem 8. Absolute minimum is -2 at $(-1, 1, 0)$;
Absolute maximum is 2 at $(1, -1, 0)$

Problem 9. $\frac{\pi}{4} + \frac{4}{15}$

Problem 10. $\frac{2\pi}{3}$