

**MATH 1272: CALCULUS II**  
**MIDTERM TEST III: ANSWERS TO THE SAMPLE PROBLEM**  
**SET**

INSTRUCTOR: ALEX VORONOV

- (1)  $a_k = \frac{2k-3}{3^k}$ , the sum is 5.
- (2) Diverges
- (3) 3.5
- (4) Converges
- (5) Diverges
- (6) Converges
- (7) 1/8
- (8) 1
- (9)

$$\sum_{n=0}^{\infty} \frac{(-1)^n}{4n+2} x^{4n+2} + C, \quad C \in \mathbb{R}$$

$R = 1$

- (10) -3/16
- (11)

$$\sum_{n=0}^{\infty} \frac{(-1)^n x^{6n+1}}{(2n)!}$$

- (12)  $(x-1)^2 + (y+3)^2 + (z-5)^2 = 9$
- (13)

$$\left\langle -\frac{2}{\sqrt{14}}, \frac{3}{\sqrt{14}}, -\frac{1}{\sqrt{14}} \right\rangle$$

- (14) -2 and -4
- (15)

$$\left\langle -\frac{8}{3}, \frac{4}{3}, -\frac{4}{3} \right\rangle$$