

CALCULUS 1501: PRACTICE EXAM 1 ANSWERS

(2010 FINAL EXAM)

1. Radius is 3, interval of convergence is $(1, 7]$.
2. (a) $\sum_{n=0}^{\infty} (-1)^n \frac{x^{4n+3}}{2n+1}$, (b) $-\frac{31!}{15}$, (c) 0.
4. $\sum_{n=0}^{\infty} x^{2n+1}$
5. (a) $\sum_{n=0}^{\infty} (-1)^n \frac{x^{2n}}{2n+1}$, (b) $\sum_{n=0}^{\infty} (-1)^n \frac{1}{(2n+1)^2}$, (c) 50.
6. (a) $1 + \frac{1}{2}x^2 + \frac{3}{8}x^4 + \frac{5}{16}x^6 + \dots$, (b) $x + \frac{x^3}{6} + \frac{3}{40}x^5 + \frac{5}{16 \cdot 7}x^7$.
7. $\frac{dy}{dx} = \frac{\sin t}{1 - \cos t}$, (b) $y - 0.5 = \sqrt{3}(x - \pi/3 + \sqrt{3}/2)$.
8. $A = 2$.
9. $\frac{3\pi}{16}$.
11. $x \ln(x^2 - 1) - 2x - \ln(x - 1) + \ln(x + 1) + C$.