

Solutions to Week in Review 11

$$1. \sum_{n=0}^{\infty} \frac{(-1)^n (x-2)^n}{2^{n+1}}, 0 < x < 4$$

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

$$3. \sum_{n=0}^{\infty} \frac{x^n}{n!}, I = (-\infty, \infty)$$

$$4. \sum_{n=0}^{\infty} \frac{(-1)^n x^{2n+1}}{(2n+1)!}, I = (-\infty, \infty)$$

$$5. \text{ a.) } \sum_{n=0}^{\infty} \frac{(-1)^n (2x)^{2n}}{(2n)!}$$

$$\text{ b.) } \sum_{n=0}^{\infty} \frac{3^n x^{n+2}}{n!}$$

$$\text{ c.) } \sum_{n=0}^{\infty} \frac{(-1)^n x^{4n+2}}{(2n+1)!}$$

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

$$7. \text{ Use the first partial sum: } S_1 = \frac{159}{320}$$

$$8. T_3 = 2 + \frac{1}{4}(x-4) - \frac{1}{64}(x-4)^2 + \frac{1}{512}(x-4)^3$$

$$9. T_2 = x - 1 - \frac{1}{2}(x-1)^2, |R_2(x)| < \frac{8}{3}$$

$$10. T_4(x) = \frac{1}{2} - \frac{\sqrt{3}}{2}(x - \frac{\pi}{3}) - \frac{1}{4}(x - \frac{\pi}{3})^2 + \frac{\sqrt{3}}{12}(x - \frac{\pi}{3})^3 + \frac{1}{48}(x - \frac{\pi}{3})^4, |R_4(x)| < \frac{\pi^5}{29160}$$