BC CALCULUS PRACTICE 10.3 **Name:** ______________________________ **Period** ________

Aisle __________ pg. 649; 3, 5, 7, 11, 15, 17, 19, 25a, 28, 31, 33

Show all necessary work neatly.

3–14 Determine whether the series converges, and if so find its sum.

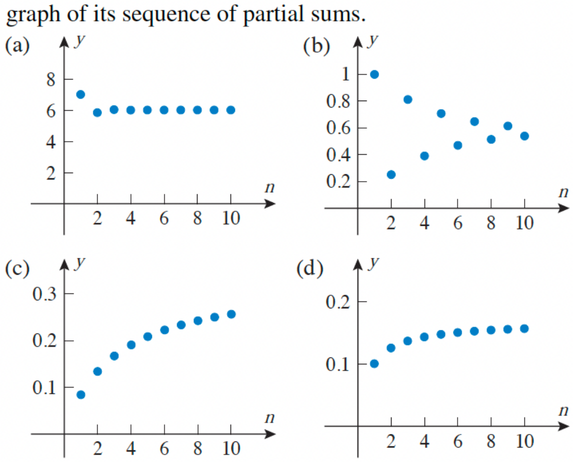
3. $\sum_{k=1}^{\infty}\left(-\frac{3}{4}\right)^{k-1}$

5. $\sum_{k=1}^{\infty}(-1)^{k-1}\frac{7}{6^{k-1}}$

7. $\sum_{k=1}^{\infty}\frac{1}{(k+2)(k+3)}$

11. $\sum_{k=3}^{\infty}\frac{1}{k-2}$

15. Match a series from one of Exercises 3, 5, 7, or 9 with the graph of its sequence of partial sums.



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9. $\sum_{k=1}^{\infty}\frac{1}{9k^2+3k-2}$

17-20 Using infinite series, express the repeating decimal as a fraction.

17. 0.4444...

19. 5.373737...

In each part, find a closed form for the nth partial sum of the series, and determine whether the series converges. If so, find its sum.

25.

(a) $\ln \frac{1}{2} + \ln \frac{2}{3} + \ln \frac{3}{4} + \cdots + \ln \frac{k}{k+1} + \cdots$

28.

Show that for all real values of x

$$\sin x - \frac{1}{2}\sin^2 x + \frac{1}{4}\sin^3 x - \frac{1}{8}\sin^4 x + \cdots = \frac{2\sin x}{2+\sin x}$$

31.

Show: $\sum_{k=1}^{\infty}\left(\frac{1}{k} - \frac{1}{k+2}\right) = \frac{3}{2}.$

33.

Show: $\frac{1}{1\cdot 3} + \frac{1}{3\cdot 5} + \frac{1}{5\cdot 7} + \cdots = \frac{1}{2}.$