Calculus 2 Workbook

Basic convergence tests

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LIMIT VS. SUM OF THE SERIES

1. Find the limit of the series, and if it converges, find its sum.

$$\sum_{n=1}^{\infty} 3e^{-n} + 2^{-n}$$

2. Find the limit of the series, and if it converges, find its sum.

$$\sum_{n=1}^{\infty} \frac{3^n + 2^n}{6^n}$$

3. Find the limit of the series, and if it converges, find its sum.

$$\sum_{n=1}^{\infty} \frac{3}{5^n} + \frac{2}{n}$$

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INTEGRAL TEST

■ 1. Use the integral test to say whether the series converges or diverges. If it converges, give the value to which it converges.

$$\sum_{n=1}^{\infty} \frac{7}{n^{\frac{3}{2}}}$$

■ 2. Use the integral test to say whether the series converges or diverges. If it converges, give the value to which it converges.

$$\sum_{n=1}^{\infty} \frac{9}{n+1}$$

■ 3. Use the integral test to say whether the series converges or diverges. If it converges, give the value to which it converges.

$$\sum_{n=1}^{\infty} \frac{9}{7n-2}$$

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P-SERIES TEST

1. Use the p-series test to say whether the series converges of diverges.

$$\sum_{n=1}^{\infty} \frac{23}{4\sqrt[3]{n}}$$

2. Use the p-series test to say whether the series converges of diverges.

$$\sum_{n=1}^{\infty} \frac{7}{5n^3}$$

3. Use the p-series test to say whether the series converges of diverges.

$$\sum_{n=1}^{\infty} \frac{6n^2 + 2n}{9n^4}$$

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NTH TERM TEST

■ 1. Use the nth term test to say whether the series diverges, or whether the nth term test is inconclusive.

$$\sum_{n=1}^{\infty} \frac{1}{2n-1}$$

■ 2. Use the nth term test to say whether the series diverges, or whether the nth term test is inconclusive.

$$\sum_{n=1}^{\infty} a_n = 8 + 2 + \frac{1}{2} + \frac{1}{8} + \frac{1}{32} + \frac{1}{128} + \dots$$

■ 3. Use the nth term test to say whether the series diverges, or whether the nth term test is inconclusive.

$$\sum_{n=1}^{\infty} \frac{11^n}{10^n}$$

■ 4. Use the nth term test to say whether the series diverges, or whether the nth term test is inconclusive.

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$$\sum_{n=1}^{\infty} \frac{n}{n+1}$$

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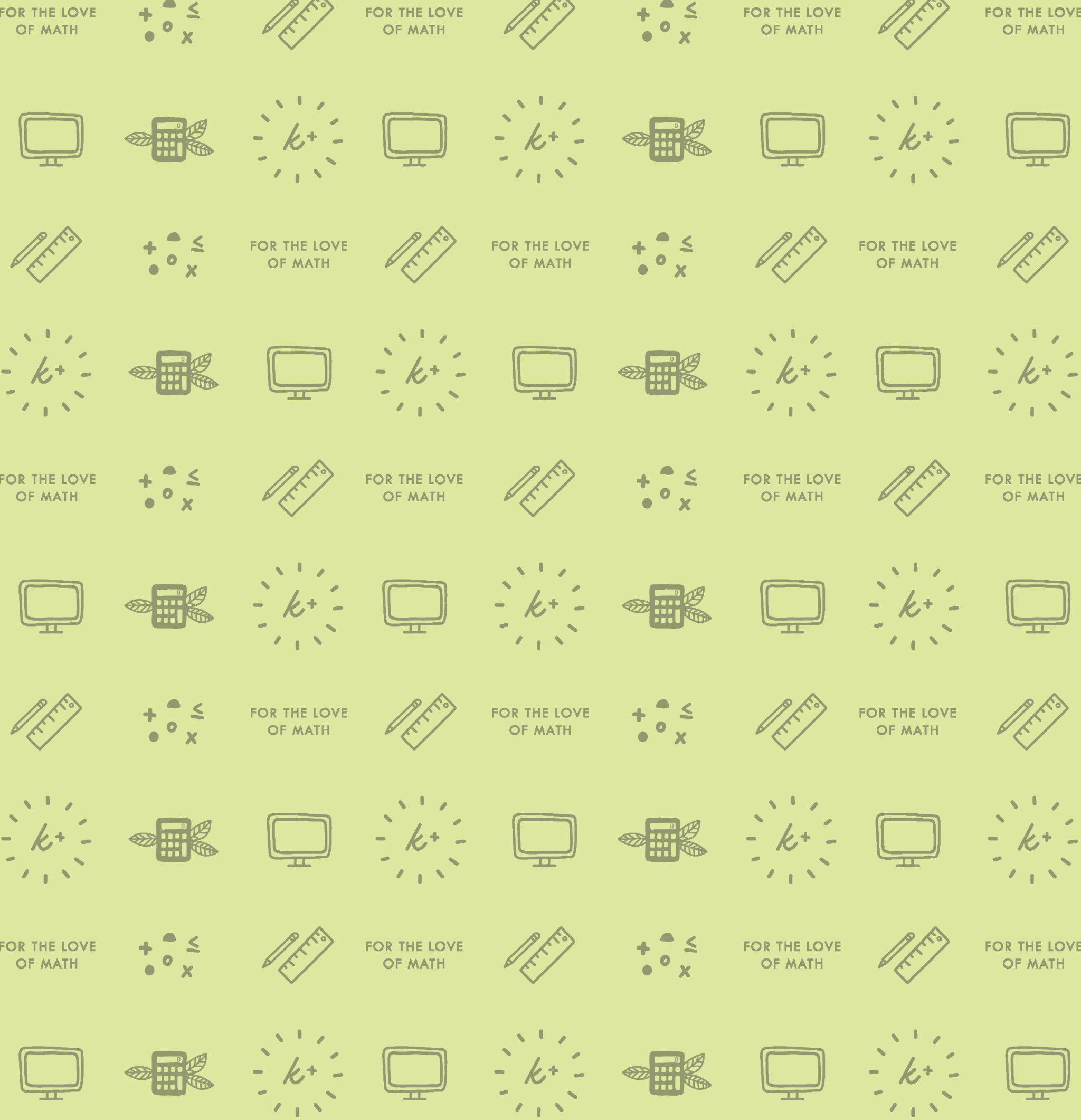
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