

## 1 Bessel functions

Read Boad §12.18, The Lengthening Pendulum. Do problem 9 from that section. Note: I haven't done this problem yet, so it might be messy!

## 2 Boas §7.2 Wave Review

Make sure you understand the following problems

1, 6, 7, 17, 21.

## 3 Boas §7.4 Average Value

(Boas §7.4, Problems #3, 4, 10, 14) These should also be relatively fast.

### 3.1

Find the average value of the function on the given interval. You may use equation 4.8 if it applies. It's well worth your time to make a quick sketch of the function, as you may be able to quickly see if the average value is zero.

$$\sin x + 2 \sin 2x + 3 \sin 3x \quad \text{on} \quad (0, 2\pi) \quad (1)$$

### 3.2

$$1 - e^{-x} \quad \text{on} \quad (0, 1) \quad (2)$$

### 3.3

$$\cos x \quad \text{on} \quad (0, 3\pi) \quad (3)$$

### 3.4

Read through Problem 13. If the result doesn't seem obvious to you, you may prove it and I'll grade it for extra credit. Use the result of Problem 13 to evaluate the following integral without doing any calculation.

$$\int_0^{4\pi/3} \sin^2 \left( \frac{3x}{2} \right) dx \quad (4)$$

## 4 Boas §7.5 Fourier Series

9, 12, 13