

Math 10B, Summer-August-2017.

HOMEWORK ASSIGNMENT

During the course, the HW assignment may be slightly changed. *Please, watch the current assignment.*

In problems marked by *, the student may skip the final calculations, stopping at the moment when the calculations remained are obvious.

1. **5.1** : 1, 2b, 3ab, 7ab, 17.

5.2: 5, 6, 14, 18, 19,

5.3: 1, 2, 15, 16, 17a,b(ii), 18a,b(ii), 21ab, 21c*, 31 (use a calculator), 33 (*Hint*: Is $f'(x)$ positive or negative?).

5.4: 1–5, 22, 23, 26, 38, 39–42.

Due to August 14.

2. **6.1**: 5, 6, 7–9 (for $F(0) = 1$), 17, 23 (optional).

6.2: 1-10 (you do not have to write down all problems, but make sure that you can do it), 17–20, 37, 41, 42, 61.

6.3: 3, 4, 7, 13 (*Hint*: In this case, as in the case of throwing upward, $v(t) = -gt + C$, but $v(0) = 0$, so C is equal to what? Once you find $v(t)$, find that the height

$$h(t) = h_0 - \frac{gt^2}{2},$$

where h_0 is the initial height equal to 100.)

6.4: 4, 5, 17 with graphing $F(x)$ for all x 's, positive and negative as well. (*Hint*: First, using the second fundamental theorem, find $F'(x)$. After that, find (using the chain rule) $F''(x)$ and figure out where it is positive and where it is negative.)

7.1: 3–5, 7, 10, 17, 19–21, 23, 25, 57, 59–61, 66, 77.

7.2: 3, 4 (*Advice*: Do integration by parts twice), 5, 7, 9, 15 (*Advice*: Set $u(t) = (\ln t)^2$, and $v(t) = t$), 20 (*Advice*: Write $\frac{z}{e^z} = z e^{-z}$), 21 (*Advice*: Set $v'(x) = \frac{1}{x^2}$), 33 (*Hint*: We considered this integral in class), 35, 45, 46, 53 (*Advice*: You may take a look at Example 6 on p. 367).

7.3: 1, 2, 22.

Compute the integrals:

$$\int_0^3 \sqrt{9-x^2} dx, \int_0^3 x \sqrt{9-x^2} dx, \int_0^{3/2} \sqrt{9-4x^2} dx, \int_0^{3/2} x \sqrt{9-4x^2} dx$$

(in the last integral, you do not have to provide final calculations);

7.4. 56.

Due to August 21.

3. **7.4:** 31, 39*, 41*, 43*, 49*, 52*;

7.6: 1, 5, 7, 8* (*optional*, do the substitution $w = \sqrt{x}$), 9*, 10, 13 (*Hint:* First, do a substitution and look at how nice the integral becomes after that), 23 (do the substitution $w = \ln x$), 29*, 31*.

Additional problem: Consider two integrals: $\int_2^\infty \frac{1}{x \ln^2 x} dx$, and $\int_e^\infty \frac{1}{x \ln^2 x} dx$.

First, explain that both integrals converge or diverge simultaneously; in other words, either both converge or both diverge. Secondly, figure out whether they converge or diverge. If the former is true, find the values of both. (*Advice:* Use the substitution $w = \ln x$.)

7.7 (in problems below, you may (though do not have to) apply just the *limit test*):
1, 3, 10, 11, 19, 21, 23.

Due to August 28.

4. **8.1:** 7, 11, 13, 16, 28, 30.

8.2 : 1, 2, 5, 7, 9, 11, 14.

Due to September 6.

5. In this HW assignment, you may be brief in writing down these problems but, please, make sure that *you can do all of them*.

9.2: 1, 2, 8, 9-11, 15, 18-20, 26-28, 37.

10.1: 1, 3 (for $n = 2$), 18, 19, 22, 25, 27, 28, 29, 30; write the Taylor polynomial of the third order for $f(x) = e^{3x}$ and $\sin(2x)$.

11.1: 1, 2, 4, 6, 16, 17.

11.4: 1, 2, 3, 7, 9, 10, 13, 15, 25.

Due to September 8.