

Homework Assignments

Math 203 – Calculus 3

Block 1 2002

All homework is due at 4:30 PM on the given day. Chapter numbers are from the Early Transcendentals edition; for the other edition of the book, add one to the chapter number. You should look at and work on *all* of the homework problems, however, only the underlined ones will be graded and commented on. The homework is meant to deepen your understanding of the course material. If you feel that you understand a non-underlined problem already, feel free to move on to the next one. By contrast, if you are stuck on any problem, even one I have not assigned, please ask about it in the problem sessions or during my office hours.

Homework due Tuesday, September 3:

Section 12.1: 2, 9

Section 12.2: 1, 4, 5, 19, 22, 26, 27, 29, 30, 32, 34, 35, 37, 40

Chapter 12 Review, Concept Check: 1-4

Extra Problems:

1. Does each statement below make sense? If so, is it true for all vectors \mathbf{a} and \mathbf{b} ? Explain your answers.
 - (a) $\mathbf{a} + \mathbf{b} = \mathbf{b} + \mathbf{a}$
 - (b) $\mathbf{a} + |\mathbf{b}| = |\mathbf{a} + \mathbf{b}|$
 - (c) $|\mathbf{b} + \mathbf{a}| = |\mathbf{a} + \mathbf{b}|$
 - (d) $|\mathbf{a} + \mathbf{b}| = |\mathbf{a}| + |\mathbf{b}|$
2. (a) Find the vector \mathbf{p} which is parallel to the line $y = -3x + 2$ and has magnitude 193.
(b) Find the vector \mathbf{q} which has magnitude 17 and forms the angle $\frac{\pi}{3}$ with the positive x -axis.

Homework due Wednesday, September 4:

Section 12.5: 3, 4, 8, 11 (For each of these problems, sketch the line or lines involved)

Section 13.1: 7-12, 23, 24, 26, 29

Chapter 13 Review, Concept Check: 2, 13

Chapter 13 Review, True-False Quiz: 1

Homework due Thursday, September 5:

Section 12.3: 1, 8, 9, 13, 14, 18, 26, 28, 31, 41, 45, 48, 49

Section 12.4: 3, 8, 9, 11, 12, 19-21, 35, 45 (If your answer is no, give an example. If your answer is yes, justify your reasoning.)

Chapter 12 Review, Concept Check: 5-9

Chapter 12 Review, True-False Quiz: 1-8, 9, 10, 11

Homework due Friday, September 6:

Section 12.5: 1 (If false, give an example to show that the statement is false.), 22,
23, 26, 27, 41, 70

Section 12.6: 1, 21-28, 37-40

Section 12.7: 1, 2, 6, 15, 31, 32, 33, 34, 35, 36, 37, 38, 47

Chapter 12 Review, Concept Check: 11, 12, 14, 15, 17, 19

Chapter 12 Review, True-False Quiz: 12, 13

Homework due Monday, September 9:

Section 13.2: 2, 11, 15, 28, 35, 39, 45

Section 13.3: 3

Section 13.4: 1, 2, 5, 8, 19, 21, 22

Chapter 13 Review, Concept Check: 3, 4

Chapter 13 Review, True-False Quiz: 2-6, 10

Homework due Tuesday, September 10:

Section 13.3: 9

Section 14.1: 5, 6, 30, 31, 32, 33, 34, 48, 49, 50-56

Section 14.2: 1, 2, 9, 10, 25, 26

Chapter 14 Review, Concept Check: 1-4

Homework due Wednesday, September 11:

Section 14.3: 1, 3, 5, 6, 8, 10, 52, 53, 64, 80, 81

Section 14.4: 6, 7, 8, 20

Chapter 14 Review, Concept Check: 5

Chapter 14 Review, True-False Quiz: 1, 3-5

Homework due Thursday, September 12:

Section 14.6: 1, 2, 3, 7, 14, 22, 27, 33-36, 43, 44

Chapter 14 Review, Concept Check: 13, 14

Homework due Friday, September 13:

Section 14.1: 19, 57, 59

Section 14.3: 58, 62

Section 14.5: 7, 10, 13, 35

Section 14.6: 26, 30, 54

Extra Problems:

1. Suppose that $\vec{f}(x, y) = \langle x + 2y + 3, 4x + 5y + 6 \rangle$, $\vec{g}(x, y, z) = \langle y + z, x + z, x + y \rangle$, $\vec{h}(t) = \langle \cos(t), \sin(t), t \rangle$, and $\vec{k}(s, t) = \langle 1, 2, 3 \rangle + s\langle 4, 5, 6 \rangle + t\langle 7, 8, 9 \rangle$.
 - (a) Find $f'(1, 2)$.
 - (b) Find $g'(1, 2, 3)$.
 - (c) Find $h'(0)$.
 - (d) Find $k'(1, 1)$.

2. Suppose f , g , h , and k are the functions given above. In each part below, decide whether the given composition makes sense. If it does, find a formula for the composite function, and use the chain rule to find the derivative matrix of the composite function for the given input value.
 - (a) The composite function $k(f)$ and the input value $(0, 0)$.
 - (b) The composite function $f(g)$ and the input value $(1, 2, 3)$.
 - (c) The composite function $g(h)$ and the input value $\frac{\pi}{2}$.

Homework due Monday, September 16:

Section 14.7: 3, 4, 7, 13, 17, 18, 27, 31, 36, 39

Chapter 14 Review, Concept Check: 15, 16, 17, 18

Chapter 14 Review, True-False Quiz: 9-12

Homework due Tuesday, September 17:

Section 14.8: 1, 2, 5, 11, 17, 27

Chapter 14 Review, Concept Check: 19

Homework due Wednesday, September 18:

Section 15.1: 6, 8, 10, 13, 17

Section 15.2: 13, 18, 30, 34-36

Section 15.3: 7, 13, 21, 26, 29

Chapter 15 Review, Concept Check: 1

Chapter 15 Review, True-False Quiz: 1

Homework due Thursday, September 19:

Section 15.3: 16, 19, 35, 39, 46 (Set up, but do not evaluate, this integral.), 49

Section 15.4: 1, 2, 3, 4, 5, 6, 17, 19, 28, 31, 34a

Chapter 15 Review, Concept Check: 3

Chapter 15 Review, True-False Quiz: 3

Homework due Friday, September 20:

Section 15.7: 19, 20, 27, 29, 45

Section 15.8: 5, 6 (Use **both** cylindrical and spherical coordinates), 30, 32a, 37, 40

(Recall that work = mass \times distance)

Chapter 15 Review, Concept Check: 7abc, 9

Extra Credit: Section 15.8: 32b

Homework due Monday, September 23:

Section 16.1: 11-18, 27, 29-32

Section 16.2: 17, 18, 20, 23, 24, 41, 43

Chapter 16 Review, Concept Check: 1, 2, 4ab

Homework due Tuesday, September 24:

Section 16.3: 1, 2, 11, 17, 23-25, 33 (Hint: Consider $f(0, 0)$.)

Section 16.4: 5, 6, 17

Chapter 16 Review, Concept Check: 5-7, 10

Homework due Wednesday, September 25:

Study for the Exam.

Enjoy your break!