

## Homework #83

## Answers

From Houghton-Mifflin Precalculus

3<sup>rd</sup> Edition

p453:

- 21) a)  $u + v = \langle 4 + 7, 2 + 1 \rangle = \langle 11, 3 \rangle$   
 b)  $u - v = \langle 4 - 7, 2 - 1 \rangle = \langle -3, 1 \rangle$   
 c)  $2u = \langle 2(4), 2(2) \rangle = \langle 8, 4 \rangle$ ,  $3v = \langle 3(7), 3(1) \rangle = \langle 21, 3 \rangle$ ,  
 $2u - 3v = \langle 8 - 21, 4 - 3 \rangle = \langle -13, 1 \rangle$   
 d)  $4u = \langle 4(4), 4(2) \rangle = \langle 16, 8 \rangle$ ,  $v + 4u = \langle 7 + 16, 1 + 8 \rangle = \langle 23, 9 \rangle$
- 22) a)  $u + v = \langle 5 + -4, 3 + 0 \rangle = \langle 1, 3 \rangle$   
 b)  $u - v = \langle 5 - -4, 3 - 0 \rangle = \langle 9, 3 \rangle$   
 c)  $2u = \langle 2(5), 2(3) \rangle = \langle 10, 6 \rangle$ ,  $3v = \langle 3(-4), 3(0) \rangle = \langle -12, 0 \rangle$ ,  
 $2u - 3v = \langle 10 - -12, 6 - 0 \rangle = \langle 22, 6 \rangle$   
 d)  $4u = \langle 4(5), 4(3) \rangle = \langle 20, 12 \rangle$ ,  $v + 4u = \langle -4 + 20, 0 + 12 \rangle = \langle 16, 12 \rangle$
- 23) a)  $u + v = \langle -5 + 1, -2 + -3 \rangle = \langle -4, -5 \rangle$   
 b)  $u - v = \langle -5 - 1, -2 - -3 \rangle = \langle -6, 1 \rangle$   
 c)  $2u = \langle 2(-5), 2(-2) \rangle = \langle -10, -4 \rangle$ ,  $3v = \langle 3(1), 3(-3) \rangle = \langle 3, -9 \rangle$ ,  
 $2u - 3v = \langle -10 - 3, -4 - -9 \rangle = \langle -13, 5 \rangle$   
 d)  $4u = \langle 4(-5), 4(-2) \rangle = \langle -20, -8 \rangle$ ,  
 $v + 4u = \langle 1 + -20, -3 + -8 \rangle = \langle -19, -11 \rangle$
- 24) a)  $u + v = \langle 0 + -6, -9 + 10 \rangle = \langle -6, 1 \rangle$   
 b)  $u - v = \langle 0 - -6, -9 - 10 \rangle = \langle 6, -19 \rangle$   
 c)  $2u = \langle 2(0), 2(-9) \rangle = \langle 0, -18 \rangle$ ,  $3v = \langle 3(-6), 3(10) \rangle = \langle -18, 30 \rangle$ ,  
 $2u - 3v = \langle 0 - -18, -18 - 30 \rangle = \langle 18, -48 \rangle$   
 d)  $4u = \langle 4(0), 4(-9) \rangle = \langle 0, -36 \rangle$ ,  
 $v + 4u = \langle -6 + 0, 10 + -36 \rangle = \langle -6, -26 \rangle$
- 25) a)  $u + v = (i + j) + (2 - 3j) = 3i - 2j$   
 b)  $u - v = (i + j) - (2 - 3j) = -i + 4j$   
 c)  $2u = 2(i + j) = 2i + 2j$ ,  $3v = 3(2i - 3j) = 6i - 9j$ ,  
 $2u - 3v = (2i + 2j) - (6i - 9j) = -4i + 11j$   
 d)  $4u = 4(i + j) = 4i + 4j$ ,  $v + 4u = (2i - 3j) + (4i + 4j) = 6i + j$