

## Exercise 1

Locate the numbers  $z_1 + z_2$  and  $z_1 - z_2$  vectorially when

- (a)  $z_1 = 2i$ ,  $z_2 = \frac{2}{3} - i$ ;      (b)  $z_1 = (-\sqrt{3}, 1)$ ,  $z_2 = (\sqrt{3}, 0)$ ;  
(c)  $z_1 = (-3, 1)$ ,  $z_2 = (1, 4)$ ;      (d)  $z_1 = x_1 + iy_1$ ,  $z_2 = x_1 - iy_1$ .

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### Solution

#### Part (a)

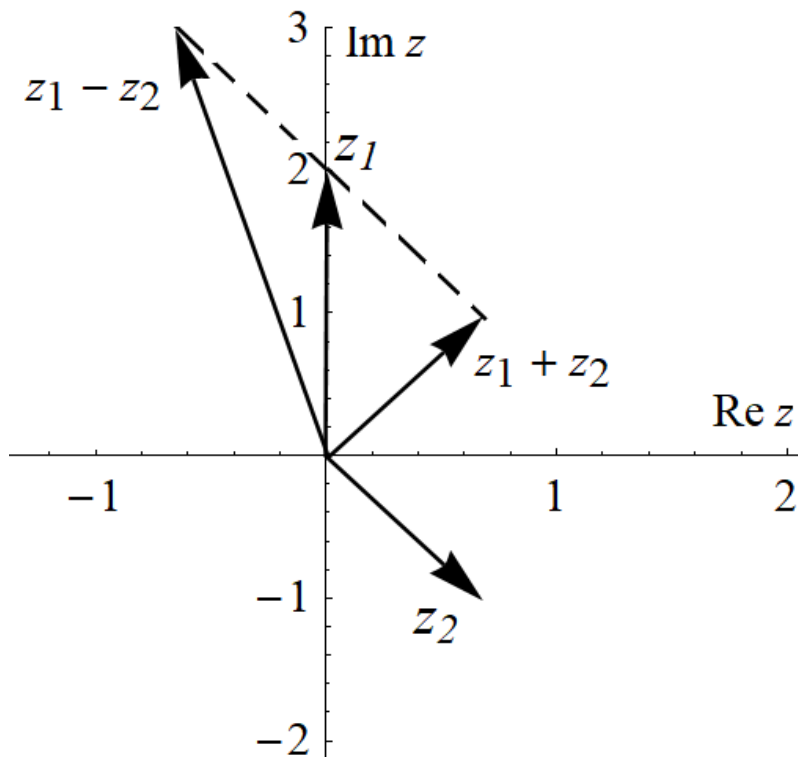


Figure 1:  $z_1 + z_2 = (2/3) + i$  and  $z_1 - z_2 = -(2/3) + 3i$ .

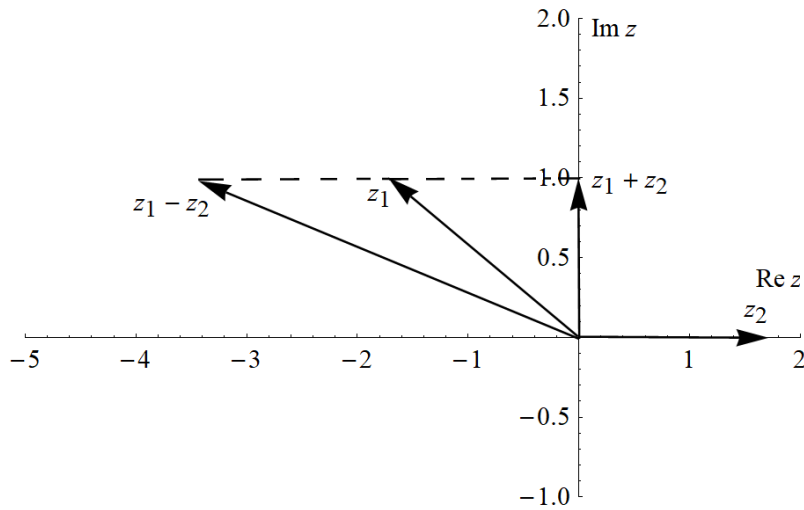
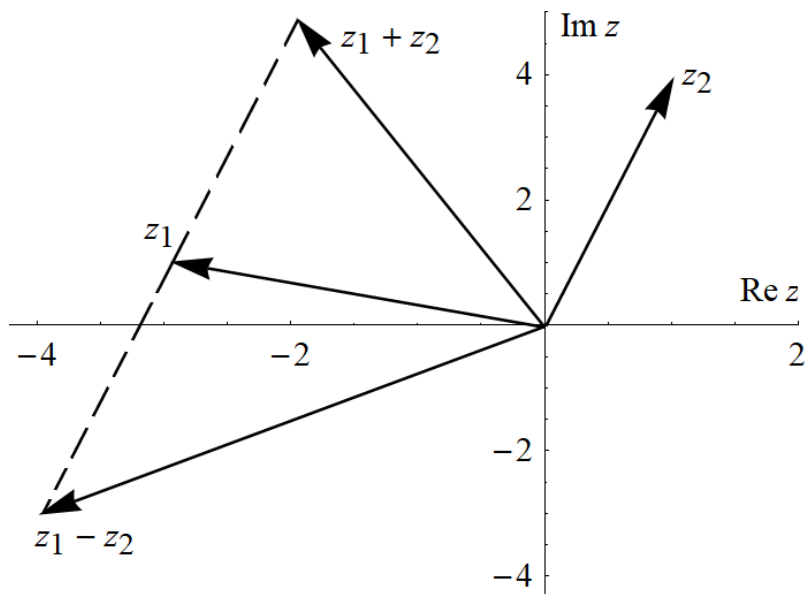
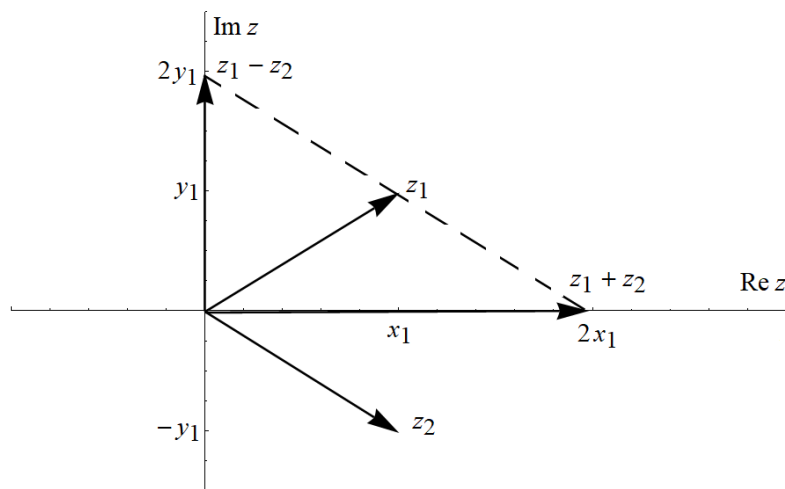
Part (b)

Figure 2:  $z_1 + z_2 = i$  and  $z_1 - z_2 = -2\sqrt{3} + i$ .

Part (c)Figure 3:  $z_1 + z_2 = -2 + 5i$  and  $z_1 - z_2 = -4 - 3i$ .

Part (d)Figure 4:  $z_1 + z_2 = 2x_1$  and  $z_1 - z_2 = 2iy_1$ .