1. A By adding A to B using the tip-to-tail method, we can see that (A) is the correct answer.

2. A The vector 2A has a magnitude of 10 in the leftward direction. Subtracting B, a vector of magnitude 2 in the rightward direction, is the same as adding a vector of magnitude 2 in the leftward direction. The resultant vector, then, has a magnitude of 10 + 2 =12 in the leftward direction.

3. D To subtract one vector from another, we can subtract each component individually. Subtracting the x components of the two vectors, we get 3 –( –1) = 4, and subtracting the y-components of the two vectors, we get 6 – 5 = 1. The resultant vector therefore has an x-component of 4 and a y-component of 1, so that if its tail is at the origin of the xy-axis, its tip would be at (4,1).

4. D The dot product of A and B is given by the formula A · B = AB cos . This increases as either A or B increases. However, cos = 0 when = 90°, so this is not a way to maximize the dot product. Rather, to maximize A · B one should set to 0º so cos = 1.

5. D Let’s take a look at each answer choice in turn. Using the right-hand rule, we find that is indeed a vector that points into the page. We know that the magnitude of is , where is the angle between the two vectors. Since AB = 12, and since sin , we know that cannot possibly be greater than 12. As a cross product vector, is perpendicular to both A and B. This means that it has no component in the plane of the page. It also means that both A and B are at right angles with the cross product vector, so neither angle is greater than or less than the other. Last, is a vector of the same magnitude as , but it points in the opposite direction. By negating , we get a vector that is identical to .