1. Two voltage V1 , V2 are in series connection and their resultant voltage is sum of these two aforementioned voltage. If V1 = 8cos(50t - π/3)Volt and V2 = 15cos (50t + 30o)Volt. Find the resultant voltage V

To find the resultant voltage of two voltage sources in series, you can simply add their individual voltage values together. In this case, the resultant voltage is:

V = V1 + V2 = 8cos(50t - π/3)V + 15cos (50t + 30o)V = 23cos (50t - π/3)V

Note that the phase angle of the resultant voltage will be the same as the phase angle of the first voltage source, since the phase angle of the second voltage source is added to the phase angle of the first voltage source.

7. Express the instantaneous current given by I = 15 sin(wt - π/3 ) in the polar and rectangular form.

To express the instantaneous current I = 15 sin(wt - π/3 ) in polar form, you can use the magnitude and angle of the phasor representation of the current. The magnitude of the phasor is 15, and the angle is -π/3 radians. Therefore, the polar form of the current is:

I = 15 ∠ (-π/3)

To express the current in rectangular form, you can use the real and imaginary components of the phasor representation of the current. The real component is the cosine of the angle, and the imaginary component is the sine of the angle. In this case, the real component is 15cos(-π/3) = -7.5, and the imaginary component is 15sin(-π/3) = -12.5. Therefore, the rectangular form of the current is:

I = -7.5 + j(-12.5)

where j is the imaginary unit.

8. A = 25sin(wt - π/4)Volt and B = 10cos (wt + 60o) Find the product of the given two entities.

To find the product of two phasors A = 25sin(wt - π/4)Volt and B = 10cos (wt + 60o), you can use the rectangular form of the phasors and multiply their real and imaginary components separately.

In rectangular form, the phasors are:

A = 25cos(-π/4) + j(25sin(-π/4)) = 17.68 + j(-17.68)

B = 10cos(60o) + j(10sin(60o)) = -5 + j(8.66)

The product of the two phasors is then:

(17.68 + j(-17.68)) \* (-5 + j(8.66)) = (-88.4 + j(148.48)

The magnitude of the resulting phasor is the square root of the sum of the squares of the real and imaginary components, and the angle is the arctangent of the imaginary component divided by the real component. In this case, the magnitude of the resulting phasor is:

√(88.4^2 + 148.48^2) = 157.84

And the angle is:

arctan(148.48/88.4) = 71.56o

Therefore, the product of the two phasors is:

157.84 ∠ 71.56o