7.2 QUIZ QUESTION 1 (1/1 point)

Suppose a 120Hz cosine wave modulates a 1kHz cosinusoidal carrier signal. The resulting signal consists of two cosines with what frequencies?

Low frequency:

880 Hz ✔ **Answer:** 880

880

High frequency

1120 Hz ✔ **Answer:** 1120

1120

EXPLANATION

Multiplying a cosine with frequency f_1 and a cosine with frequency f_2 results in the sum of two cosines, one at frequency $f_1 + f_2$ and one at frequency $f_1 - f_2$.

You have used 1 of 3 submissions

7.2 QUIZ QUESTION 2 (1/1 point)

The product $\sin(2\pi \cdot 9t) \cdot \sin(2\pi \cdot 200t)$ can be expressed as

- ◉ $0.5\cos(2\pi \cdot 191t) - 0.5\cos(2\pi \cdot 209t)$ ✔
- ○ $0.5\sin(2\pi \cdot 191t) - 0.5\sin(2\pi \cdot 209t)$
- ○ $0.5\cos(2\pi \cdot 191t) + 0.5\cos(2\pi \cdot 209t)$

7.3 Modulation with Complex Exponentials
Week 4 Quiz due Nov 23, 2015 at 15:30 UT

- Topic 8: Signal Transmission - Demodulation
- MATLAB download and tutorials
- MATLAB Sandbox

- $0.5\sin(2\pi \cdot 191t) + 0.5\sin(2\pi \cdot 209t)$

EXPLANATION

Subtracting the second equation below from the first,

$$\cos(A-B) = \cos(A)\cos(B) + \sin(A)\sin(B)$$

$$\cos(A+B) = \cos(A)\cos(B) - \sin(A)\sin(B)$$

results in

$$\cos(A-B) - \cos(A+B) = 2\sin(A)\sin(B)$$

Thus, $\sin(A)\sin(B) = 0.5 * \cos(A-B) - 0.5 * \cos(A+B)$.

You have used 2 of 2 submissions