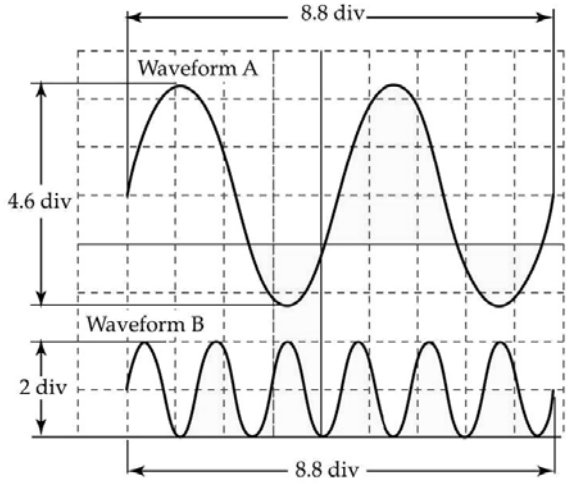
Sheet (2): Oscilloscopes

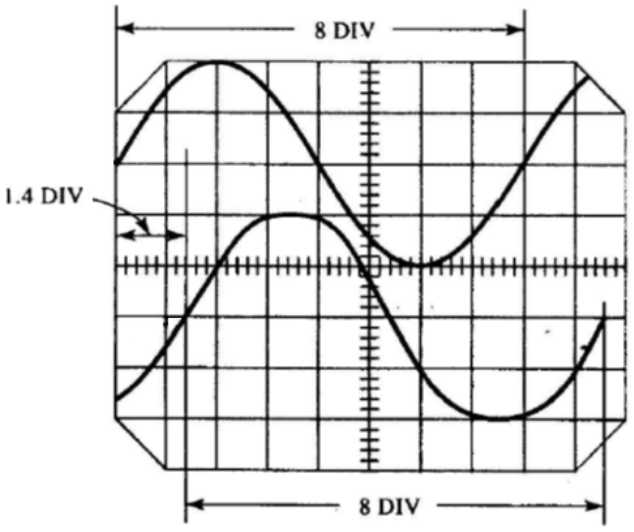
1) A 1 kHz triangular wave with a peak amplitude of $10V$ is applied to the vertical deflecting plates of a CRT. A 1 kHz sawtooth wave with a peak amplitude of $20V$ is applied to the horizontal deflecting plates. The CRT has a vertical deflection sensitivity of $0.4cm/V$, and a horizontal deflection sensitivity of $0.25cm/V$. Assuming that the two inputs are synchronized, determine the waveform displayed on the screen.

2) Repeat question 1 with the triangular-wave frequency changed to 2kHz.

3) If an oscilloscope is set such that its TIME/DIV control is $0.1ms$, and its VOLTS/DIV control is $500mV$, determine the peak amplitude and frequency of each waveform.



4) If an oscilloscope is set such that its TIME/DIV control is $50ms$, and its VOLTS/DIV control is $20mV$,
   a. determine the peak amplitude and frequency of each waveform, and calculate the phase difference.
   b. how many horizontal divisions would there be between the beginning of each waveform cycle for a phase difference of 36°?



5) Match each of the following vertical and horizontal inputs with the corresponding Lissajous figures