

## Problems

5.1 A phase modulated waveform is described by

$$\lambda(t) = 50\cos(2\pi \times 10^6 t + 0.001\cos 2\pi \times 500t)$$

- (a) What is  $f_i(t)$ , the instantaneous frequency of  $\lambda(t)$ ?
- (b) What is the approximate bandwidth of  $\lambda(t)$ ?
- (c) Is  $\lambda(t)$  a narrowband or wideband angle-modulated signal?
- (d) What is  $s(t)$ , the information signal?