Given: continuous-time signal $x(t) = 36 \cos(12\,t)$

1. What is the minimum sampling frequency to allow perfect restoration of the signal?

2. What is the discrete frequency of x[n] if it is sampled from $x(t)$ at $f_s = 24/\pi$ samples/second?

3. What is the discrete frequency of x[n] if it is sampled from $x(t)$ at $f_s = 120/\pi$ samples/second?

4. What is the discrete frequency of x[n] if it is sampled from $x(t)$ at $f_s = 6/\pi$ samples/second?