6. [11 points] For this problem, your final answers must be **exact** and should be written *in the spaces provided.*

    a. [5 points] Let $V(t)$ be the voltage across a resistor in a circuit (measured in volts) t minutes after 8:00 a.m. on January 29, 2013. The function $V(t)$ is periodic, and it takes 5 minutes to go from a minimum of -10 volts to a maximum of 40 volts. At 8:37 a.m., the voltage across the resistor is -10 volts. Find a formula for $V(t)$, assuming $V(t)$ is a sinusoidal function of t.

$$V(t) = \underline{\hspace{8cm}}$$

    b. [6 points] Find all values of t in the interval $-0.5 \le t \le 1$ for which:

$$5\sin\left(2\pi\left(t + \frac{1}{4}\right)\right) + 3 = 0$$

Your answer must be found *algebraically* and should be **exact**. You must **show your work** carefully to receive full credit.

The solutions in $-0.5 \le t \le 1$ *are* $\underline{\hspace{8cm}}$