This is a non-inverting amplifier with a gain of $G = 1 + \frac{373}{1.05} = 356.2$.
With such a large gain, it will saturate when $V_i = \pm 10 V / G = \pm 0.028 V$.

Times when $|V_i| < 0.028$, $V_o$ are

$T_1 = \pm \frac{0.1-0.028}{5 V/100\text{ms}} = \pm 1.440 \text{ ms}$.
$T_2 = \pm \frac{0.1+0.028}{5 V/100\text{ms}} = \pm 2.560 \text{ ms}$.

- Sketch $V_o$.
- At what times does $V_o$ reach $\pm 10 V$?
- Does this circuit suffer from multiple transitions?

(Notes: voltage axis not to scale. The slope of the voltage may be approximated as $5 V/100\text{ms}$. Op amps are ideal)
- Sketch $V_o$. 

- At what times does $V_o$ reach $\pm 10 \text{ V}$? 

- Does this circuit suffer from multiple transitions? 

(Notes: voltage axis not to scale. The slope of the voltage may be approximated as $5 \text{ V/100 ms}$. Op amps are ideal) 

Thresholds at $\pm \frac{1.24 \text{k}\Omega}{440 + 1.24 \text{k}\Omega} \times 10 \text{ V} = \pm 0.028 \text{ V}$. 

Conditions: 
1) If $V_i < V_+ \implies V_o = +10 \text{ V}$ and $V_+ = +0.028 \text{ V}$. 
2) If $V_i > V_+ \implies V_o = -10 \text{ V}$ and $V_+ = -0.028 \text{ V}$. 

- Sketch $V_o$. 
  1) Initially, $V_o = +10$ and $V_+ = +0.028 \text{ V}$ 
  2) when $V_i$ crosses $+0.028 \text{ V}$, then $V_o = -10$ and $V_+ = -0.028 \text{ V}$ 
  3) when $V_i$ crosses $-0.028 \text{ V}$, then $V_o = +10$ and $V_+ = +0.028 \text{ V}$ 
  4) when $V_i$ crosses $+0.028 \text{ V}$, then $V_o = -10$ and $V_+ = -0.028 \text{ V}$ 

- At what times does $V_o$ reach $\pm 10 \text{ V}$? 
  Transitions at $\pm \frac{0.1-0.028}{5\text{ V}/100\text{ ms}} = \pm 1.44 \text{ ms}$. 
  1) Beginning until $-1.44 \text{ ms} \implies V_o = +10 \text{ V}$. 
  2) $-1.44 \text{ ms}$ until $0 \text{ ms} \implies V_o = -10 \text{ V}$. 
  3) $0 \text{ ms}$ until $+2.56 \text{ ms} \implies V_o = +10 \text{ V}$. 
  4) $+2.56 \text{ ms}$ until end $\implies V_o = -10 \text{ V}$. 

- Does this circuit suffer from multiple transitions? 
  Yes
This is a low pass filter with a gain of \( G = -\frac{586\, \text{k}\Omega}{18.4\, \text{k}\Omega} = -31.85. \)
With such a large gain, it will saturate when \( V_i = \pm 10 \, \text{V} / G = \pm 0.314 \, \text{V}. \)
The time constant is \( \tau = 586 \, \text{k}\Omega \times 316 \, \text{nF} = 185.2 \, \text{ms}. \)

- At what times does \( V_o \) reach \( \pm 10 \, \text{V} \)?
  Transitions at \( \pm \frac{0.1 + 0.314}{5 \, \text{V} / 100 \, \text{ms}} = \pm 8.3 \, \text{ms}. \)
  Thus: 1) Beginning until \( -8.3 \, \text{ms} \implies V_o = +10 \, \text{V}. \)
  2) \( +8.3 \, \text{ms} \) until end \( \implies V_o = -10 \, \text{V}. \)

- Sketch \( V_o \) (this is difficult because of the exponential – indicate the main features of the curve)
  \( V_i \) brief changes sign. assuming the input transitions are short compared to the time constant we can approximate the output as an exponential (perhaps with a “bump” \( V_i \) briefly changes sign). assuming the input transitions are short compared to \( RC \), then \( V_o \) will NOT suffer from multiple transitions.