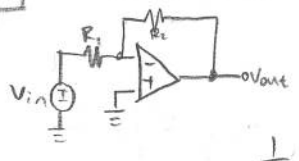
ECEn 340 sect. 1 Homework 10	8.17, 19, 30, 35, 47, 55	Benjamin Bergeson

8.17 Gain = 8 Gain Error: 0.1 % $R_{out} = 2k\Omega$ $R_{in} = 1k\Omega$

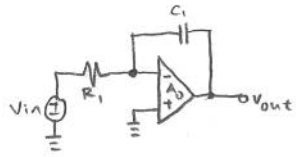


$Gain = \frac{R_2}{R_1} = 8$ $R_2 = 8R_1$ $R_1 = R_{in} = 1k\Omega$ $R_2 = 8k\Omega$

$\frac{1}{A_0}(1+8) = 0.001$ $\boxed{A_0 = 9000}$

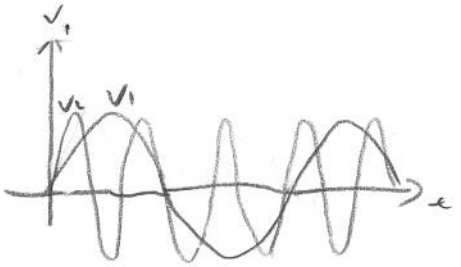
8.19

$V_{out} = \frac{-1}{RC}\int_0^t V_{in}\,dt$ amplitude of $V_{in} = V_0$

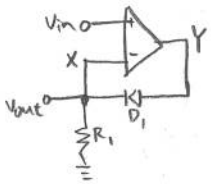


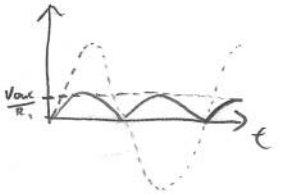
amplitude of $V_{out} = \frac{-V_0}{R_1 C_1}$

8.30



8.35





8.47 $V_{in} + V_{OS} = V_{out}\left(\frac{R_2}{R_1+R_2}\right)$ $V_{out} = (V_{in}+V_{OS})\frac{R_1+R_2}{R_2} = \left(1+\frac{R_1}{R_2}\right)(V_{in}+V_{OS})$

8.55 Bandwidth: 100 MHz Gain: 4

$\frac{R_F}{R_S} = 3$ $\frac{R_1}{R_2} = 3$

$\left(1+\frac{R_2}{R_1+R_2}A_0\right)f_1 = \left(1+\frac{R_2}{4R_2}A_0\right)f_1$

For a) 12550 Hz
b) 1.26E8 Hz

b is adequate