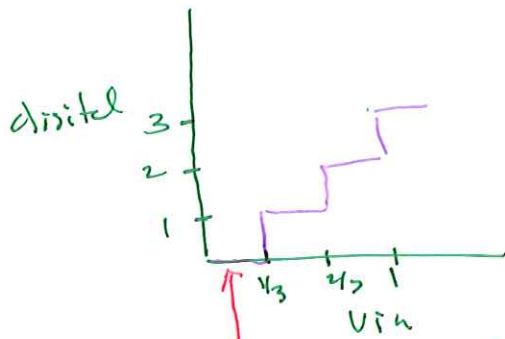


smallest V_{FS} \rightarrow Δ ADC = 1 TS $\frac{1}{3}^+ V$



to be "perfect" needs to be shifted left so first riser is at $\frac{1}{2} \cdot \frac{1}{3} V$

36 n-bit flash requires 2^n comparators so 7 \rightarrow 8 bit requires $2 \times$ # comparators hence $2 \times$ price

SA requires 1 clock pulse per bit so

conversion time 8 bit = $\frac{8}{7}$ conversion time 7 bit

8

4

Complex review -

2) a) $1+i = \sqrt{2} e^{i\pi/4} \rightarrow \frac{1}{1+i} = \frac{1}{\sqrt{2}} e^{-i\pi/4} \rightarrow \frac{1}{\sqrt{2}} \angle -45^\circ$

b) $\frac{3+i}{1+3i}$ has mag = 1 used calculator: $3+i \rightarrow 18.4^\circ$
 $1+3i \rightarrow 71.5^\circ$
 $\underline{\underline{-53.1^\circ}}$

c) $25 \angle 2^\circ$
 $\swarrow 114.6^\circ$

d) $\frac{1}{\sqrt{2}} \angle 0^\circ$

3) calculator: $-1.47 + 1.12i$

by hand: $\frac{3i-7}{i+4} \frac{(-i+4)}{(-i+4)} = \frac{(-28+3) + (7+12)i}{17} = \frac{-25}{17} + \frac{19}{17}i$

b) calculate $(.69 + 77i)^4 = (-.18 + .99i)^2 = (-.938 - .361i)$

c) calculate $\sqrt{3+4i} = 2+i$ (check: $(2+i)^2 = 4-3+4i$)

f) $25 e^{2i} = 25 (\cos(2^\circ) + i \sin(2^\circ)) = -10.4 + 22.7i$
 must be in radians

(e) $\ln(-1) = i\pi$
 $\uparrow e^{i\pi}$