

4) a) $z_1 - z_2 = (1 - 5i) - (1 + i) = -6i$ (S)

$$\frac{z_1 - z_2}{z_2} = \frac{-6i}{1+i} \times \frac{1-i}{1-i} = \frac{-6+6i}{2} = -3+3i$$

$$= -3 + 3i$$

b) $z_2 = \sqrt{2} e^{i\pi/4} = \sqrt{2} (\cos \pi/4 + i \sin \pi/4)$

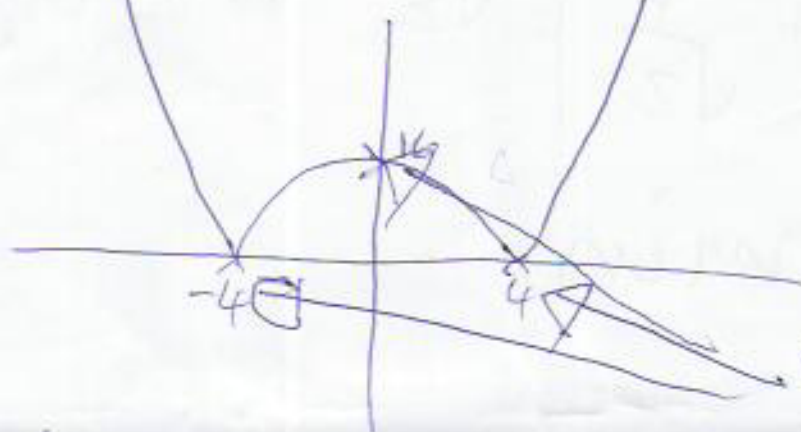
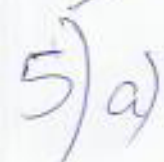
$$Z_2^{1/3} = 2^{1/6} (\cos \pi/4 + i \sin \pi/4)^{1/3} = 2^{1/6} (e^{i\pi/4})^{1/3}$$

$$= 2^{1/6} e^{\pi i/12}$$

$$\underline{\underline{\text{OT}}}$$

$$2^{1/6} e^{(\frac{\pi i}{4} + 2\pi)/3} = 2^{1/6} e^{3\pi i/4}$$

$$\frac{0\pi}{2\pi} \cdot 2^{1/6} e^{(\pi i/4 + 4\pi)/3} = 2^{1/6} e^{17\pi i/12}$$



critical points

at $\pm 4 = x$
and $x = 0$

at $x = -4$ and $y = 0$

local extreme values
~~2~~ 4 (both minima)

~~2~~4 (both minima)

and $x=0, y=16$ (maxima)

b) ~~Since $f(x) = \cos x$ was not~~ critical
points if f differentiable everywhere
P.T.O