

Mathematics 522 In Class Portion of Final Name: _____

Show your work! Answers that do not have a justification will receive no credit.

1. (40 Points) Compute the following

(a) $e^{\frac{-\pi}{6}i}$

(b) $(1 - i)^{20}$

(c) $\arg(1 - \sqrt{3}i)$

(d) $\log(4 - 4i)$

(e) $\sin(2 - 3i)$

(f) i^{3i}

(g) $\operatorname{Re}[(3 - 2i)(x + yi)]$

(h) all the cube roots of -8 .

2. (10 Points) Find the harmonic conjugates of $u = x^2 - xy - y^2 + x$

Have a nice summer!