(a) $z^* = 2-3i$

(b) $z^2 = (2+3i)(2+3i) = 4+12i-9 = -5+12i$

(c) $|z|^2 = z \cdot z^* = 2^2+3^2 = 13$

(d) $|z^2| = \sqrt{(-5)^2+12^2} = \sqrt{169} = 13$

(e) $z^{-1} = \dfrac{2-3i}{(2+3i)(2-3i)} = \dfrac{2-3i}{4+9} = \dfrac{2}{13} - \dfrac{3}{13}i$