a) $z_1 = \left[\sqrt{2}; \frac{3\pi}{4}\right]$ $z_2 = \left[\sqrt{2}; \frac{\pi}{4}\right]$

$$z_1 \cdot z_2 = \left[\sqrt{2}\cdot\sqrt{2}; \frac{3\pi}{4} + \frac{\pi}{4}\right] = \left[2; \pi\right] = -2 + 0i$$

$$z_1 / z_2 = \left[\sqrt{2}/\sqrt{2}; \frac{3\pi}{4} - \frac{\pi}{4}\right] = \left[1; \frac{\pi}{2}\right] = 0 + i$$

b) $z_1 = \left[4; \frac{4\pi}{3}\right]$ $z_2 = \left[5; \frac{\pi}{2}\right]$

$$z_1 \cdot z_2 = \left[20; \frac{11\pi}{6}\right] = 10\sqrt{3} - 10i$$

$$z_1 / z_2 = \left[\frac{4}{5}; \frac{5\pi}{6}\right] = -\frac{2\sqrt{3}}{5} + \frac{2}{5}i$$

c) $z_1 = \left[2; \frac{\pi}{2}\right]$ $z_2 = \left[3; \frac{3\pi}{2}\right]$

$$z_1 \cdot z_2 = \left[2\cdot 3; \frac{\pi}{2} + \frac{3\pi}{2}\right] = \left[6; 2\pi\right] = 6 + 0i$$

$$z_1 / z_2 = \left[2/3; -\pi\right] = -2/3 + 0i$$

d) $z_1 \cdot z_2 = [-10; 0] \cdot [-4; 0] = [40; 0] = 40$

$z_1 / z_2 = [2,5; 0] = 2,5$