$$F(z) = \ln \cos^2 4z$$

$$F'(z) = \frac{1}{\cos^2 4z} \cdot (\cos^2 4z)' =$$

$$= \frac{1}{\cos^2 4z} \cdot 2\cos 4z \cdot \sin 4z \cdot (4z)' =$$

$$= \frac{4 \cdot 2 \cos 4z \cdot \sin 4z}{\cos^2 4z} = \frac{8 \sin 4z}{\cos 4z} = 8 \operatorname{tg} 4z$$

$$F'\left(\frac{\pi}{16}\right) = 8 \operatorname{tg} \frac{4\pi}{16} = 8 \operatorname{tg} \frac{\pi}{4} = 8 \cdot 1 = 8.$$