

$$\boxed{1} \quad (1) \quad -\frac{24}{25}$$

$$(2) \quad \frac{7}{25}$$

$$(3) \quad -\frac{24}{7}$$

$$\boxed{2} \quad \sin 3\alpha$$

$$= \sin (\alpha + 2\alpha)$$

$$= \sin \alpha \cos 2\alpha + \cos \alpha \sin 2\alpha$$

$$= \sin \alpha (1 - 2 \sin^2 \alpha) + 2 \sin \alpha \cos^2 \alpha$$

$$= \sin \alpha (1 - 2 \sin^2 \alpha) + 2 \sin \alpha (1 - \sin^2 \alpha)$$

$$= 3 \sin \alpha - 4 \sin^3 \alpha$$