35.

a) $\sin 3\theta = \sin(\theta + 2\theta)$

$= \sin\theta \cos 2\theta + \sin 2\theta \cos\theta$

$= \sin\theta (\cos^2\theta - \sin^2\theta)$

$+ 2\sin\theta\cos\theta \cos\theta$

$= \sin\theta\cos^2\theta - \sin^3\theta$

$+ 2\sin\theta\cos^2\theta$

$= 3\sin\theta\cos^2\theta - \sin^3\theta$

$= 3\sin\theta(1 - \sin^2\theta) - \sin^3\theta$

$= 3\sin\theta - 3\sin^3\theta - \sin^3\theta$

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

b) // $\cos 3\theta = \cos(\theta + 2\theta)$

$= \cos\theta\cos 2\theta - \sin\theta\sin 2\theta$

$= \cos\theta(\cos^2\theta - \sin^2\theta) -$

$- \sin\theta \, 2\sin\theta\cos\theta$

$= \cos^3\theta - \cos\theta\sin^2\theta$

$- 2\sin^2\theta\cos\theta$

$= \cos^3\theta - 3\cos\theta\sin^2\theta$

$= \cos^3\theta - 3\cos\theta(1 - \cos^2\theta)$

$= \cos^3\theta - 3\cos\theta + 3\cos^3\theta$

$= 4\cos^3\theta - 3\cos\theta$ //

c) $\operatorname{tg} 3\theta = \operatorname{tg}(\theta + 2\theta)$

$$= \frac{\operatorname{tg}\theta + \operatorname{tg}2\theta}{1 - \operatorname{tg}\theta\operatorname{tg}2\theta}$$

$$= \frac{\operatorname{tg}\theta + \frac{2\operatorname{tg}\theta}{1-\operatorname{tg}^2\theta}}{1 - \operatorname{tg}\theta\frac{2\operatorname{tg}\theta}{1-\operatorname{tg}^2\theta}}$$

$$= \frac{\frac{\operatorname{tg}\theta - \operatorname{tg}^3\theta + 2\operatorname{tg}\theta}{1-\operatorname{tg}^2\theta}}{\frac{1-\operatorname{tg}^2\theta - 2\operatorname{tg}^2\theta}{1-\operatorname{tg}^2\theta}}$$

$$= \frac{3\operatorname{tg}\theta - \operatorname{tg}^3\theta}{1 - 3\operatorname{tg}^2\theta}$$