

# Lösungen/Solutions/ E+M Analysis 09

## Uebung 1

$$\frac{4\pi}{9}$$

$$\left\{ x \rightarrow -\sqrt{\frac{1}{3} \operatorname{Tan}\left[\frac{4\pi}{9}\right]}, x \rightarrow \sqrt{\frac{1}{3} \operatorname{Tan}\left[\frac{4\pi}{9}\right]} \right\}$$

$$\{x \rightarrow -1.37493, x \rightarrow 1.37493\}$$

$$1.37493$$

## Uebung 2

$$4$$

$$\operatorname{ArcTan}[4]$$

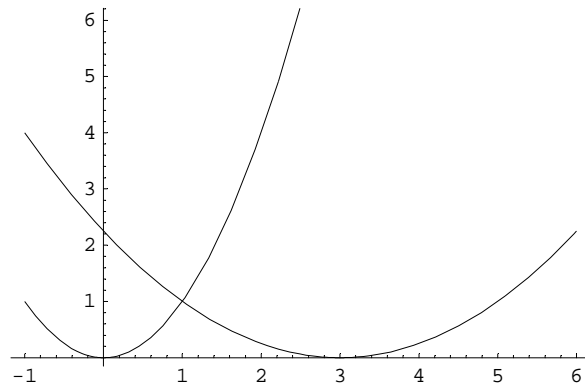
$$1.32582$$

## Uebung 3

$$36x^3 + 21x^6$$

## Uebung 4

$$\left\{ a \rightarrow \frac{1}{4}, b \rightarrow -\frac{3}{2}, c \rightarrow \frac{9}{4} \right\}$$



$$\{x \rightarrow -3, x \rightarrow 1\}$$

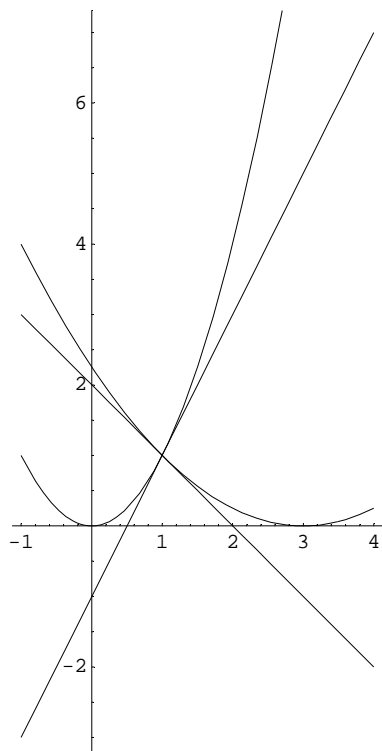
1

$\alpha_1$

1.10715

$\alpha_2$

-0.785398



$\{\alpha_1, \alpha_2\}$  $\{1.10715, -0.785398\}$  $\{\alpha_1, \alpha_2\}$  in Degree $\{63.4349, -45.\}$  $(\text{Abs}[\alpha_1] + \text{Abs}[\alpha_2])$  in Degree

108.435

## Uebung 5

 $\{2x, x^2\}$  $2(x - x_0)x + x_0^2$  $\frac{x_0}{2}$  $\frac{\text{Abs}[x_0]^3}{4}$  $\frac{\text{Abs}[x_0]^3}{4}$ 

## Uebung 6

 $2x \cos[x] - x^2 \sin[x]$ 

## Uebung 7

 $3 \cos[x] \sin[x]^2$ 

## Uebung 8

 $3 - \sec[x] (1 + x \tan[x])$ 

## Uebung 9

 $\frac{3\sqrt{x}}{2}$

## Uebung 10

$$-\frac{2}{x^3} - \frac{2x^3}{(2+x^2)^2} + \frac{2x}{2+x^2}$$

$$\frac{2(-4 - 4x^2 + x^4)}{x^3(2+x^2)^2}$$

## Uebung 11

$$2 \cos[2x]$$

## Uebung 12

$$-\frac{\cot[x]}{x^2} - \frac{\csc[x]^2}{x}$$

$$-\frac{\cot[x] + x \csc[x]^2}{x^2}$$

## Uebung 13

$$-\frac{-2 + 3x^2 - \sin[x]}{(-2x + x^3 + \cos[x])^2}$$

$$\frac{2 - 3x^2 + \sin[x]}{(-2x + x^3 + \cos[x])^2}$$

## Uebung 14

$$4x^3 \cos[\cos[x^4]] \sin[x^4] \sin[\sin[\cos[x^4]]]$$

$$4x^3 \cos[\cos[x^4]] \sin[x^4] \sin[\sin[\cos[x^4]]]$$