



CAMI Wiskunde: Graad 11

GRAAD 11_Aard van wortels

11.4 Aard van wortels

1. Bereken die diskriminant

(a) $f(m) = -2m^2 + 8$

(b) $f(z) = z^2 + z - 2$

(c) $f(r) = 2r^2 - r + 4$

(d) $f(x) = -3x^2 + 12x - 12$

(e) $f(v) = 3v^2 - 6v$

2. Bepaal die aard van die wortels sonder om die vergelyking op te los

(a) $f(n) = -2n^2 + n - 3$

(b) $f(m) = -2m^2$

(c) $f(w) = 2w^2 - 5w - 3$

(d) $f(r) = 3r^2 + 6r$

(e) $f(x) = -x^2 - 1$



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MEMO

1. Bereken die diskriminant [5.4.1.1]

(a) $f(m) = -2m^2 + 8$

$$\begin{aligned} b^2 - 4ac \\ &= 0^2 - 4(-2)(8) \\ &= 64 \end{aligned}$$

(b) $f(z) = z^2 + z - 2$

$$\begin{aligned} b^2 - 4ac \\ &= (1)^2 - 4(1)(-2) \\ &= 9 \end{aligned}$$

(c) $f(r) = 2r^2 - r + 4$

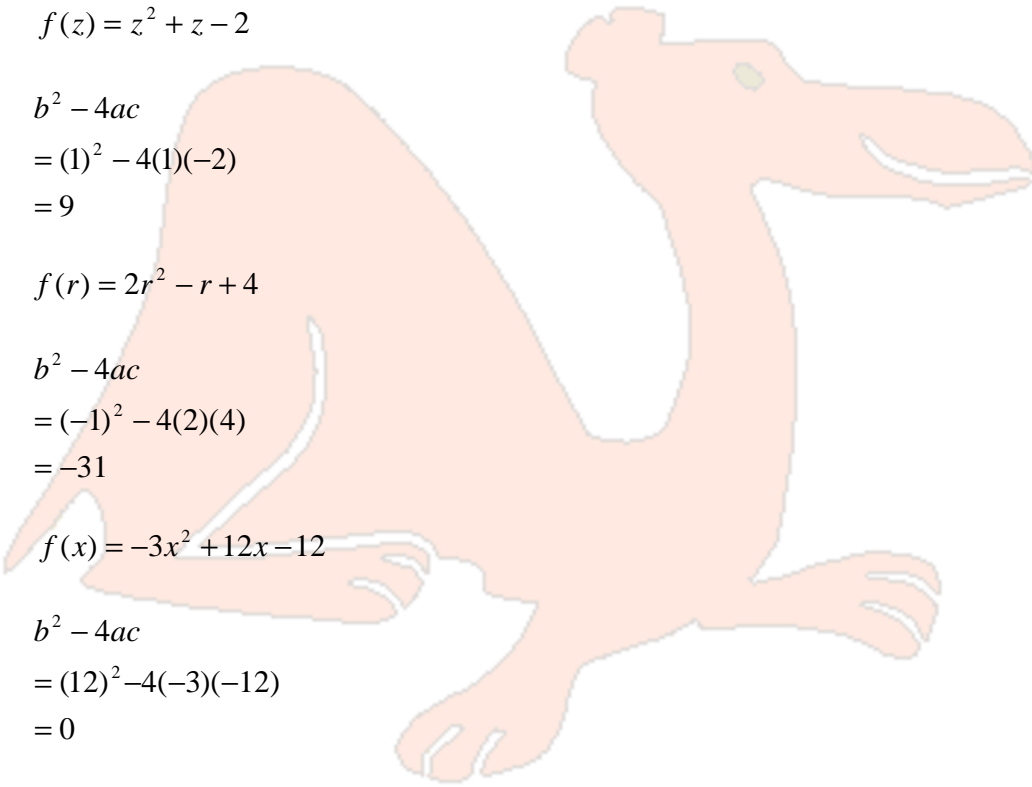
$$\begin{aligned} b^2 - 4ac \\ &= (-1)^2 - 4(2)(4) \\ &= -31 \end{aligned}$$

(d) $f(x) = -3x^2 + 12x - 12$

$$\begin{aligned} b^2 - 4ac \\ &= (12)^2 - 4(-3)(-12) \\ &= 0 \end{aligned}$$

(e) $f(v) = 3v^2 - 6v$

$$\begin{aligned} b^2 - 4ac \\ &= (-6)^2 - 4(3)(0) \\ &= 36 \end{aligned}$$





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2. Bepaal die aard van die wortels sonder om die vergelyking op te los [5.4.1.2]

(a) $f(n) = -2n^2 + n - 3$

$$\begin{aligned} b^2 - 4ac \\ &= (1)^2 - 4(-2)(-3) \\ &= -23 \\ &\therefore \text{nie reële wortels} \end{aligned}$$

(b) $f(m) = -2m^2$

$$\begin{aligned} b^2 - 4ac \\ &= (0)^2 - 4(-2)(0) \\ &= 0 \\ &\therefore \text{gelyke, rasionale, reële wortels} \end{aligned}$$

(c) $f(w) = 2w^2 - 5w - 3$

$$\begin{aligned} b^2 - 4ac \\ &= (-5)^2 - 4(2)(-3) \\ &= 49 \\ &\therefore \text{ongelyke, rasionale, reële wortels} \end{aligned}$$

(d) $f(r) = 3r^2 + 6r$

$$\begin{aligned} b^2 - 4ac \\ &= (6)^2 - 4(3)(0) \\ &= 36 \\ &\therefore \text{ongelyke, rasionale, reële wortels} \end{aligned}$$

(e) $f(x) = -x^2 - 1$

$$\begin{aligned} b^2 - 4ac \\ &= (0)^2 - 4(-1)(-1) \\ &= -4 \\ &\therefore \text{nie reële wortels} \end{aligned}$$