

Derdegraadsfuncties

19. $f(x) = -x^3 + 27x + 44$

In de toppen geldt: $f'(x) = 0$

$$f'(x) = -3x^2 + 27 \quad \text{dus} \quad -3x^2 + 27 = 0 \quad \rightarrow \quad x^2 = 9$$

$$x = 3 \quad \text{of} \quad x = -3$$

$$x_A = -3 \quad \text{en} \quad x_B = 3 \quad \text{dus even ver van de } y\text{-as.}$$

20. De grafiek van $f(x)$ snijdt de y -as als $x = 0$ dus als $y = 44$

Los op: $f(x) = 44 \quad \rightarrow \quad -x^3 + 27x + 44 = 44$

$$-x^3 + 27x = 0$$

$$-x(x^2 - 27) = 0$$

$$x = 0 \quad \text{of} \quad x = \sqrt{27} \quad \text{of} \quad x = -\sqrt{27}$$

$$\text{Dus } PR = 2\sqrt{27} = 10,39$$

Of met de GR:

$$y_1 = -x^3 + 27x + 44$$

$$y_2 = 44$$

Intersect $x = 10,39$

$$\rightarrow \quad PR = 10,39$$

21. $h(x) = (x + 4)(p + 4x - x^2)$

$$= xp + 4x^2 - x^3 + 4p + 16x - 4x^2$$

$$= -x^3 + (p + 16)x + 4p$$

Nu moet gelden $p + 16 = 27$ én $4p = 44$ Dus $p = 11$

22. $x_B = \sqrt{\frac{p+16}{3}}$

$$\text{Als } x_B = 8 \text{ dan } \frac{p+16}{3} = 64 \quad \rightarrow \quad p+16 = 192 \quad \rightarrow \quad p = 176$$