

Exercise 1.1.25 Find the distance  $d$  between the points  $P_1 = (-7, 3)$  and  $P_2 = (4, 0)$ .

Solution

Well, the distance between points  $P_1 = (x_1, y_1)$  and  $P_2 = (x_2, y_2)$  is

$$d = d(P_1, P_2) = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}.$$

Here,  $P_1 = (x_1, y_1) = (-7, 3)$  and

$P_2 = (x_2, y_2) = (4, 0)$ , so

$x_1 = -7, y_1 = 3, x_2 = 4$ , and  $y_2 = 0$ .

Therefore,

$$d = \sqrt{(4 - (-7))^2 + (0 - 3)^2}$$

$$= \sqrt{(11)^2 + (-3)^2} = \sqrt{121 + 9}$$

$$= \boxed{\sqrt{130}}. \quad \square$$