

Exercise 28

In Exercises 19–28, find any intercepts.

$$y = 2x - \sqrt{x^2 + 1}$$

Solution

To find the y -intercept, plug in $x = 0$.

$$y = 2(0) - \sqrt{(0)^2 + 1} = -1$$

Therefore, the y -intercept is $(0, -1)$. To find the x -intercept(s), set $y = 0$ and solve the equation for x .

$$2x - \sqrt{x^2 + 1} = 0 \tag{1}$$

$$2x = \sqrt{x^2 + 1}$$

$$4x^2 = x^2 + 1$$

$$3x^2 = 1$$

$$x = \pm \frac{1}{\sqrt{3}}$$

Notice that $-1/\sqrt{3}$ does not satisfy equation (1), so drop the minus sign.

$$x = \frac{1}{\sqrt{3}}$$

Therefore, the x -intercept is $(\frac{1}{\sqrt{3}}, 0)$.

