

$$1) 2 + \sqrt{x+5} = 3$$

$$(\sqrt{x+5})^2 = (1)^2$$

$$x+5=1$$

$$\boxed{x=-4}$$

$$2) (\sqrt{5x+14})^2 = x^2$$

$$5x+14=x^2$$

$$0=x^2-5x-14$$

$$0=(x-7)(x+2)$$

$$\boxed{x=7} \text{ and } \cancel{x=-2}$$

$$\sqrt{35+14} = 7 \quad \checkmark$$

$$\sqrt{-10+14} = -2$$

$$\sqrt{4} = -2 \quad \times$$

$$3) \sqrt{3x+5}^2 = \sqrt{x+1}^2$$

$$3x+5 = x+1$$

$$2x+5=1$$

$$2x=-4$$

$$\boxed{x=-2}$$

$$4) \sqrt{x+4} + 2 = -x$$

$$\frac{-2 \quad -2}{\quad}$$

$$\sqrt{x+4}^2 = (-x-2)^2$$

$$x+4 = (-x-2)(x-2)$$

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

$$0 = x^2+3x$$

$$0 = x(x+3)$$

$$\cancel{x=0} \text{ and } \boxed{x=-3}$$

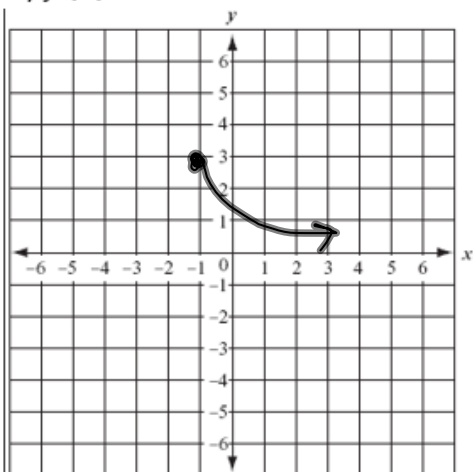
$$\sqrt{4} + 2 = 0 \quad \times$$

$$\sqrt{1} + 2 = 3 \quad \checkmark$$

$$5) \sqrt{5x+4} - \sqrt{x+1} = 1$$



$$1) f(x) = -2\sqrt{x+1} + 3$$

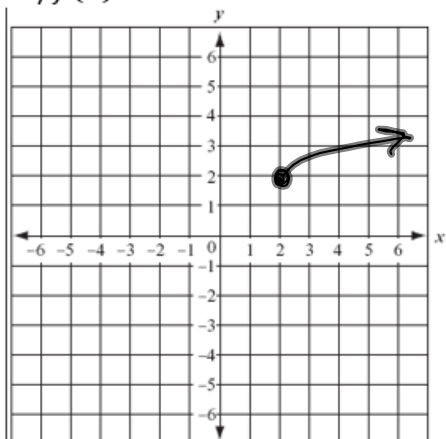


Domain:  $[-1, \infty)$

Range:  $(-\infty, 3]$

Transformations: flip, left + 1, up 3

$$2) f(x) = \sqrt{x-2} + 2$$



Domain:  $[2, \infty)$

Range:  $[2, \infty)$

Transformations: right 2, up 2