

1-25 Bellwork

$$-3 + \sqrt{-3x-5} = x$$

$$\sqrt{-3x-5} = x+3 \leftarrow$$

$$-3x-5 = (x+3)^2$$

$$-3x-5 = x^2 + 6x + 9$$

$$0 = x^2 + 9x + 14$$

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

$$x = \boxed{-2} \quad \cancel{-7}$$

$$\sqrt{(-3)(-7)-5} = -7 + 3$$

$$\sqrt{21-5} = -4$$

$$\sqrt{16} = -4$$

$$\sqrt{(-3)(-2)-5} = -2 + 3$$

$$\sqrt{6-5} = 1 \checkmark$$

$$\begin{aligned} 2 + \sqrt{x+1} &= \sqrt{3x+1} \\ (2 + \sqrt{x+1})^2 &= (\sqrt{3x+1})^2 \\ 4 + 4\sqrt{x+1} + x + 1 &= 3x + 1 \\ 4\sqrt{x+1} + \cancel{x} + \cancel{5} &= 3x + 1 \\ 4\sqrt{x+1} &= 2x - 4 \\ (4\sqrt{x+1})^2 &= (2x - 4)^2 \\ 16(x+1) &= 4x^2 - 16x + 16 \\ \cancel{16x} + \cancel{16} &= 4x^2 - 16x + \cancel{16} \\ &= 4x^2 - 16x + 16 \\ 0 &= 4x^2 - 32x \quad 0 = 4x(x-8) \end{aligned}$$

$x = 8$

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

$$2 + \sqrt{8+1} = \sqrt{3(8)+1}$$

$$2 + \sqrt{9} = \sqrt{25}$$

$$2 + 3 = 5 \quad \checkmark$$

$$2 + \sqrt{0+1} = \sqrt{3(0)+1}$$

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

