

# 14 Classwork 14 MAT 1275 Professor Chiu

Name: \_\_\_\_\_

1. Solve

① Isolate " $\sqrt{\quad}$ " term:

$$\sqrt{w+32} - w = 2$$

② Square it on both sides:

$$\Rightarrow \sqrt{w+32} = 2+w$$

③ Solve for w

$$\Rightarrow (\sqrt{w+32})^2 = (2+w)^2$$

$$\Rightarrow w+32 = 4+4w+w^2$$

④ Factor

$$\Rightarrow 0 = -28+3w+w^2$$

$$\Rightarrow w^2+3w-28=0$$

$$\begin{array}{l} w \quad \times \quad -4 \\ w \quad \times \quad +7 \\ \hline \sqrt{m+1} = \sqrt{m+9} \end{array}$$

2. Solve

① Square on both sides:

$$\Rightarrow (\sqrt{m+1})^2 = (\sqrt{m+9})^2$$

② Isolate " $\sqrt{m}$ "

$$\Rightarrow (\sqrt{m+1})(\sqrt{m+1}) = m+9$$

$$\Rightarrow m+1 + \sqrt{m} + \sqrt{m} = m+9$$

$$\Rightarrow m+1 + 2\sqrt{m} = m+9$$

$$\Rightarrow \frac{2\sqrt{m}}{2} = \frac{8}{2} \Rightarrow \sqrt{m} = 4$$

③ Square on both sides

$$(\sqrt{m})^2 = (4)^2 \Rightarrow m=16$$

$$\begin{aligned} &\Rightarrow (x-4)(x+7) = 0 \\ &\Rightarrow (x-4) = 0, \quad x+7 = 0 \\ &\Rightarrow x=4 \quad \text{or} \quad x=-7 \end{aligned}$$

Check:

$$\begin{aligned} x=4, \quad \sqrt{4+32} - 4 &= \sqrt{36} - 4 \\ &= 6 - 4 = 2 \checkmark \\ x=-7, \quad \sqrt{-7+32} - (-7) &= \sqrt{25} + 7 = 5 + 7 = 12 \neq 2 \times \end{aligned}$$

Check:

$$\begin{aligned} m=16, \\ \text{LHS} &= \sqrt{16} + 1 = 4 + 1 = 5 \\ \text{RHS} &= \sqrt{16+9} = \sqrt{25} = 5 \end{aligned}$$

$\Rightarrow m=16$  is an answer since LHS = RHS.