

### Think It Through

September 21, 2022

★ indicates that the problem is considered ‘more challenging’ than what would normally be required in Math 20. Please make sure you give your best attempt on all of these problems.

1.  $\frac{\sqrt{50} + 7}{\sqrt{50} - 7} + \frac{\sqrt{50} - 7}{\sqrt{50} + 7} = ?$

2. Solve  $x + \sqrt{x - 2} = 4$ .

3. Solve the following equation:  $\sqrt{2m + 9} + \sqrt{1 - 2m} = 4$ .

4.  $\sqrt{3 + 2\sqrt{2}} - \sqrt{3 - 2\sqrt{2}} = a$ . Find  $a$ .

5. Solve the following equation:  $\sqrt{9x - 2} = \sqrt{4x - 3} + \sqrt{x + 1}$

6. ★ What is the closed form of the below expression?

$$\sqrt{4 + \sqrt{4 - \sqrt{4 + \sqrt{4 - \sqrt{4 + \sqrt{4 - \dots}}}}}}$$

7. ★ Solve for  $x$ :

$$x + \sqrt{x + \frac{1}{2}} + \sqrt{x + \frac{1}{4}} = 1024$$