Warmup 1: Simplify (Algebra 2 Review)

1. $\dfrac{2\left(\frac{-3\sqrt{5}}{2}\right)}{1-\left(\frac{3\sqrt{5}}{2}\right)^2} = \dfrac{-3\sqrt{5}}{\frac{4}{4}-\frac{45}{4}} = \dfrac{-3\sqrt{5}}{\frac{-41}{4}} = -3\sqrt{5}\cdot\dfrac{-4}{41} = \boxed{\dfrac{12\sqrt{5}}{41}}$

2. $\sqrt{\dfrac{1-\left(\frac{7}{5\sqrt{2}}\right)}{2}}$ (rational denom. $\frac{\sqrt{2}}{\sqrt{2}}$) $= \sqrt{\dfrac{1-\frac{7\sqrt{2}}{10}}{2}} = \sqrt{\dfrac{\frac{10}{10}-\frac{7\sqrt{2}}{10}}{2}} = \sqrt{\dfrac{\frac{10-7\sqrt{2}}{10}}{2}} = \sqrt{\dfrac{10-7\sqrt{2}}{10}\cdot\dfrac{1}{2}} = \sqrt{\dfrac{10-7\sqrt{2}}{20}}$

$= \dfrac{\sqrt{10-7\sqrt{2}}}{\sqrt{20}} = \dfrac{\sqrt{10-7\sqrt{2}}}{2\sqrt{5}}\cdot\dfrac{\sqrt{5}}{\sqrt{5}} = \dfrac{\sqrt{5}\cdot\sqrt{10-7\sqrt{2}}}{10} = \dfrac{\sqrt{5(10-7\sqrt{2})}}{10} = \boxed{\dfrac{\sqrt{50-35\sqrt{2}}}{10}}$

3. $\left(\frac{7}{25}\right)^2-\left(\frac{-24}{25}\right)^2$

$= \dfrac{49}{625}-\dfrac{576}{625} = \boxed{\dfrac{-527}{625}}$