Solve the following equations, making sure to check for extraneous solutions.

1. $\dfrac{8}{3n-2} = \dfrac{2}{n-1}$

2. $\dfrac{t}{t+1} = \dfrac{3}{t+1}$

3. $\dfrac{x-3}{x+5} = \dfrac{x}{x+2}$

4. $\dfrac{4r-16}{r^2+2r-8} = \dfrac{4}{r+4}$

5 (Challenge): Harry Potter and Ron Weasley are going to clean Hagrid's cabin after being caught skipping class. On his own, Ron would take 7 hours to clean the cabin and Harry would take 4 hours by himself. If the two of them work together, how long would it take for them to clean the cabin working together? (HINT: "work" problems use the equation $\dfrac{1}{t_1} + \dfrac{1}{t_2} = \dfrac{1}{t_3}$ where t_1 and t_2 represent the times it takes to complete the job individually and t_3 represents the time it takes for them working together).

Simplify each of the following and state the asymptotes.

6. $\dfrac{2v^2+9v-56}{v^2-2v-80} \div \dfrac{1}{v-10}$

7. $\dfrac{n+3}{n+2} \div \dfrac{n^2+2n-3}{n^2-2n+1}$

8. $\dfrac{t-8}{t^2-2t-48} \div \dfrac{4x+40}{x+10}$

9. $\dfrac{4x^2+8x-5}{(2x-1)(x-5)(x-1)}$

10. $\dfrac{3}{x+7} + \dfrac{4}{x-8}$

11. $\dfrac{x}{x+2} - \dfrac{3x-5}{x^2+3x+2}$