

19. Multiply  $\frac{20x+20}{9x-10} \cdot \frac{90x-100}{2x^2-2}$

$$\frac{20(x+1)}{\cancel{9x-10}} \cdot \frac{\overset{5}{10}\cancel{(9x-10)}}{\cancel{2}(x+1)(x-1)}$$

$$= \frac{100}{x-1}$$

20. Solve:  $x^3 - x = -2x^2 + 2$

$$\begin{array}{r} x^3 + 2x^2 - x - 2 = 0 \\ \underline{+2x^2 - 2} \phantom{-x - 2} \\ x^3 + 2x^2 - x - 2 = 0 \\ \underline{+2x^2 - 2} \phantom{-x - 2} \\ x^3 + 2x^2 - x - 2 = 0 \end{array}$$

$$x^3 + 2x^2 - x - 2 = 0$$

$$x^2(x+2) - 1(x+2) = 0$$

$$(x+2)(x^2-1) = 0$$

$$x+2=0 \quad \text{or} \quad x^2-1=0$$

$$\frac{-2}{-2} \quad \frac{+1}{+1}$$

$$x = -2$$

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

$$x = \pm 1$$

$$1, -1, -2$$

LCD:  $x$   
21. Solve:

$$\frac{20}{x} \cdot x = 7 \cdot x - \frac{1}{x} \cdot x$$

$$20 = 7x - 1$$

$$+1 \qquad \qquad +1$$

$$\frac{21}{7} = \frac{7x}{7}$$

$$3 = x$$

LCD:  $70x$

22. Add:

$$\frac{2 \cdot 10}{7x \cdot 10} \boxed{\frac{20}{70x}} + \frac{7 \cdot 7}{10x \cdot 7} \boxed{\frac{49}{70x}}$$

$$\frac{20}{70x} + \frac{49}{70x} = \frac{20 + 49}{70x}$$

$$= \frac{69}{70x}$$