

# Algebra II

5-9

## Solving Rational Equations

Solve. (pg 249)

$$1) \frac{3}{t} - \frac{1}{3t} = \frac{2}{3} \quad | \cdot 3t$$

Domain:  $\mathbb{R}$  except  $\{0\}$

$$9 - 1 = 2t$$

$$8 = 2t$$

$$4 = t$$

$$\{4\}$$

$$9) \frac{6t^2 - t - 1}{3(t^2 + 1)} = 2 \quad | \cdot 3(t^2 + 1)$$

Domain:  $\mathbb{R}$

$$6t^2 - t - 1 = 6(t^2 + 1)$$

$$6t^2 - t - 1 = 6t^2 + 6$$

$$-t - 1 = 6$$

$$-t = 7$$

$$t = -7$$

$$\{-7\}$$

$$15) \frac{3}{x+1} - \frac{1}{x-2} = \frac{1}{x^2 - x - 2} \quad | \cdot (x+1)(x-2)$$

Domain:  $\mathbb{R}$  except  $\{-1, 2\}$

$$3(x-2) - (x+1) = 1$$

$$3x - 6 - x - 1 = 1$$

$$2x - 7 = 1$$

$$2x = 8$$

$$x = 4$$

$$\{4\}$$

$$23) \frac{5}{u^2 + u - 6} = \frac{2}{1} - \frac{u-3}{u-2} \quad | \cdot (u+3)(u-2)$$

Domain:  $\mathbb{R}$  except  $\{2, -3\}$

$$5 = 2(u+3)(u-2) - (u-3)(u+3)$$

$$5 = 2(u^2 + u - 6) - (u^2 - 9)$$

$$5 = 2u^2 + 2u - 12 - u^2 + 9$$

$$5 = u^2 + 2u - 3$$

$$0 = u^2 + 2u - 8$$

$$0 = (u+4)(u-2)$$

$$\{-4, 2\}$$

Pg 249

2-18 even

19-28 all