

## Solving Rational Equations Notes

Solve each equation. Remember to check for extraneous solutions.

$$1) \frac{2}{3x^2 + 13x + 4} = \frac{1}{3x^2 + 13x + 4} + \frac{1}{(3x+1)(x+4)} \quad 2) \frac{(x)}{6} + \frac{5x-30}{2x} = \frac{5}{2} \quad (x)$$

$$2 = 1 + x + 4$$

$$2 = x + 5$$

$$\boxed{x = -3}$$

$$12x + 5x - 30 = 5x$$

$$17x - 30 = 5x$$

$$\frac{-30}{-12} = \frac{-12x}{-12}$$

$$\boxed{x = \frac{5}{2}}$$

$$3) \frac{1}{5n} = \frac{(5n)}{1(5n)} + \frac{n^2 + 2n + 1}{5n}$$

$$1 = 5n + n^2 + 2n + 1$$

$$1 = n^2 + 7n + 1$$

$$0 = n^2 + 7n$$

$$n(n+7) = 0$$

$$n+7=0$$

$$\cancel{n=0} \quad \boxed{n = -7}$$

extraneous

$$4) \frac{v(v+3)}{v(v-2)} + \frac{3(v-2)}{v} = \frac{1}{v^2 - 2v}$$

$$v^2 + 3v + 3v - 6 = 1$$

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

$$v^2 + 6v - 7 = 0$$

$$(v-1)(v+7) = 0$$

$$v-1=0 \quad v+7=0$$

$$\boxed{v=1, \quad v=-7}$$