

Name: \_\_\_\_\_

Date: \_\_\_\_\_

### Section 12.9 Homework

1.  $\left(\frac{b+6}{4b^2} + \frac{3}{2b^2} = \frac{b+4}{2b^2}\right) 4b^2$

$b+6 + 6 = 2(b+4)$   
 $b+12 = 2b+8$   
 $4 = b$

3.  $\left(\frac{n^2-n-6}{n^2} - \frac{2n+12}{n} = \frac{n-6}{2n}\right) 2n^2$

$2n^2 - 2n - 12 - 4n^2 - 24n = n^2 - 6n$   
 $-2n^2 - 26n - 12 = n^2 - 6n$   
 $0 = 3n^2 + 20n + 12$   
 $0 = (3n+2)(n+6)$

$n = -6$   
 $n = -2/3$

5.  $\left(\frac{1}{v} + \frac{3v+12}{v^2-5v} = \frac{7v-56}{v^2-5v}\right) v(v-5)$

$v-5 + 3v+12 = 7v-56$   
 $4v+7 = 7v-56$   
 $63 = 3v$   
 $21 = v$

$v = 21$

7.  $\left(\frac{1}{n-8} - 1 = \frac{7}{n-8}\right) n-8$

$1 - n + 8 = 7$   
 $-n + 9 = 7$   
 $-n = -2$

$n = 2$

9.  $\left(\frac{1}{r-2} + \frac{1}{r^2-7r+10} = \frac{6}{r-2}\right) (r-5)(r-2)$

$r-5 + 1 = 6(r-5)$   
 $r-5 + 1 = 6r-30$   
 $-4 = 5r-30$   
 $26 = 5r$   
 $r = 26/5$

11.  $\left(\frac{a-2}{a+3} - 1 = \frac{3}{a+2}\right) (a+3)(a+2)$

$(a-2)(a+2) - (a+3)(a+2) = 3(a+3)$   
 $a^2 - 4 - a^2 - 5a - 6 = 3a + 9$   
 $-5a - 10 = 3a + 9$   
 $-8a = +19$   
 $a = -19/8$

13.  $\left(\frac{a^2-4a-12}{a^2-10a+25} = \frac{6}{a-5} + \frac{a-3}{a-5}\right) (a-5)^2$

$a^2 - 4a - 12 = 6a - 30 + a^2 - 8a + 15$   
 $-2a = -3$   
 $a = 3/2$

2.  $\left(\frac{k+4}{4} + \frac{k-1}{4} = \frac{k+4}{4k}\right) 4k$

$k^2 + 4k + k^2 - k = k + 4$   
 $2k^2 + 3k = k + 4$   
 $2k^2 + 2k - 4 = 0$

$2(k^2 + k - 2) = 0$

$2(k+2)(k-1) = 0$   
 $k = -2, k = 1$

4.  $\left(\frac{3x^2+24x+48}{x^2} + \frac{x-6}{2x^2} = \frac{1}{x^2}\right) 2x^2$

$6x^2 + 48x + 96 + x - 6 = 2$   
 $6x^2 + 49x + 88 = 0$   
 $(2x+11)(3x+8) = 0$

$x = -1/2$   
 $x = -8/3$

6.  $\left(\frac{1}{m^2-m} + \frac{1}{m} = \frac{5}{m^2-m}\right) m(m-1)$

$1 + m - 1 = 5$   
 $m = 5$

8.  $\left(1 = \frac{1}{x^2+2x} + \frac{x-1}{x}\right) x(x+2)$

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

$x = -1$

10.  $\left(\frac{n+5}{n+8} = 1 + \frac{6}{n+1}\right) (n+8)(n+1)$

$(n+5)(n+1) = (n+8)(n+1) + 6(n+8)$   
 $n^2 + 6n + 5 = n^2 + 9n + 8 + 6n + 48$   
 $6n + 5 = 15n + 56$   
 $5 = 9n + 56$   
 $-51 = 9n$   
 $-17/3 = n$

12.  $\left(\frac{1}{r+3} = \frac{r+4}{r-2} + \frac{6}{r-2}\right) (r-2)(r+3)$

$r-2 = (r+4)(r+3) + 6r + 18$   
 $r-2 = r^2 + 7r + 12 + 6r + 18$   
 $0 = r^2 + 12r + 32$   
 $(r+8)(r+4)$   
 $r = -8$   
 $r = -4$

14.  $\left(\frac{1}{k} - 5 = \frac{1}{k^2+k}\right) k(k+1)$

$k+1 - 5k(k+1) = 1$   
 $k+1 - 5k^2 - 5k = 1$   
 $-5k^2 - 4k + 1 = 1$   
 $5k^2 + 4k = 0$   
 $k(5k+4) = 0$   
 $k = 0, k = -4/5$