Solving rational functions

1. $\frac{5}{m} = \frac{8}{2m-6}$

$5(2m-6) = 8m$

$10m - 30 = 8m$

$2m = 30 \Rightarrow m = 15$

2. $\frac{y}{4} = \frac{9}{y}$

$y^2 = 36 = *$

$y = \pm\sqrt{36} = \pm 6$

3. $\frac{x+5}{5} = \frac{6}{x-2}$

$(x+5)(x-3) = 30$

$x^2 + 3x - 10 = 30$

$x^2 + 3x - 40 = 0$

$(x-5)(x+8) = 0$

$x = 5$ or $x = -8$

4. $\frac{2}{a-2} = \frac{3a-1}{2a+11}$

$4a + 22 = (3a-1)(a-2)$

$4a + 22 = 3a^2 - 7a + 2$

$3a^2 - 11a - 20 = 0$

$(3x+4)(x-5) = 0$

$x = 5$ or $x = -\frac{4}{3}$

5. $w + \frac{16}{w} = 10$

$w^2 + 16 = 10w$

$w^2 - 10w + 16 = 0 \Rightarrow (w-2)(w-8) = 0$

$w = 2$ or $w = 8$

6. $\frac{k}{3} + \frac{2}{k} = \frac{13}{3k}$

$\frac{k}{3} + 2 = \frac{13}{3}$

$k + 6 = 13$

$k = 7$.

7. $\frac{4}{3v} - \frac{1}{v} = \frac{v+2}{2v^2}$

$\frac{4(2v) - 6v = 3(v+2)}{6v^2}$

$\frac{8v - 6v = 3v + 6}{6v^2} \Rightarrow \frac{2v = 3v + 6}{6v^2}$

$\frac{v + 6}{6v^2}$

8. $\left[\frac{3}{n} - \frac{1}{2} = \frac{n-5}{n}\right] n = 3 - \frac{n}{2} = n - 5$

$6 - n = 2n - 10$

$16 = 3n$

$n = 16/3$.