

NAME: \_\_\_\_\_

Key

DATE: \_\_\_\_\_

HOUR: \_\_\_\_\_

## Section 8.6 Review

Solve each equation or inequality. Check your solutions.

1)  $\left(\frac{x}{x-3} = \frac{1}{4}\right) 4(x-3)$

$$4x = x - 3$$

$$3x = -3$$

$$x = -1$$

Check:

$$\frac{-1}{-4} = \frac{1}{4} \checkmark$$

2)  $\left(\frac{5}{x} + \frac{3}{5} = \frac{2}{x}\right) 5x$

$$25 + 3x = 10$$

$$3x = -15$$

$$x = -5$$

Check

$$\frac{5}{-5} + \frac{3}{5} = \frac{2}{-5}$$

$$-2/5 = -2/5 \checkmark$$

3)  $\left(\frac{x-2}{x} = \frac{x-4}{x-6}\right) x(x-6)$

$$(x-2)(x-6) = x(x-4)$$

$$x^2 - 8x + 12 = x^2 - 4x$$

$$-8x + 12 = -4x$$

$$12 = 4x$$

$$3 = x$$

Check

$$\frac{3-2}{3} = \frac{3-4}{3-6}$$

$$\frac{1}{3} = \frac{-1}{-3} \checkmark$$

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

$$2(d-2) + d = d^2 - 2d$$

$$2d - 4 + d = d^2 - 2d$$

$$3d - 4 = d^2 - 2d$$

$$0 = d^2 - 5d + 4$$

$$0 = (d-4)(d-1)$$

$$d = 4, 1$$

Check

$$x=4$$

$$\frac{2}{4} + \frac{1}{2} = 1 \checkmark$$

$$x=1$$

$$\frac{2}{1} + \frac{1}{-1} = 1 \checkmark$$

5)  $\left(\frac{1}{2+3x} + \frac{2}{2-3x} = 0\right) (2+3x)(2-3x)$

$$2 - 3x + 2(2+3x) = 0$$

$$2 - 3x + 4 + 6x = 0$$

$$6 + 3x = 0$$

$$3x = -6$$

$$x = -2$$

Check  $x = -2$ 

$$\frac{1}{2-6} + \frac{2}{2+6} = 0$$

$$\frac{1}{-4} + \frac{2}{8} = 0 \checkmark$$

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

$$n-1 + n+1 = 2$$

check  $n=1$ 

$$2n = 2$$

$$n = 1$$

$$\frac{1}{2} + \frac{1}{0}$$

no!

no solution

$$7) \left( \frac{p}{p+1} + \frac{p}{p-3} + 1 = 0 \right) (p+1)(p-3)$$

$$p(p-3) + p(p+1) + (p+1)(p-3) = 0$$

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

$$3p^2 - 4p - 3 = 0$$

$$p = \frac{+4 \pm \sqrt{16 - 4(3)(-3)}}{2(3)}$$

$$= \frac{4 \pm \sqrt{52}}{6}$$

can't factor  
use Quad  
Formula!

$$8) \left[ \frac{5z+2}{z^2-4} = \frac{-5z}{2-z} + \frac{2}{z+2} \right] (-1)(z+2)(z-2)$$

$$(5z+2)(-1) = -5z(z+2) + 2(-1)(z-2)$$

$$-5z - 2 = -5z^2 - 10z - 2z + 4$$

$$-5z - 2 = -5z^2 - 12z + 4$$

$$0 = -5z^2 - 7z + 6$$

$$0 = (-5z^2 - 10z + 3z + 6)$$

$$0 = -5z(z+2) + 3(z+2)$$

$$0 = (-5z+3)(z+2)$$

$$z = -2 + \frac{5}{3}$$

30  
3.10

$$9) \left( \frac{1}{x-3} + \frac{2}{x^2-9} = \frac{5}{x+3} \right) (x-3)(x+3)$$

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

$$x+5 = 5x-15$$

$$20 = 4x$$

$$5 = x$$

Check:  $x=5$

$$\frac{1}{2} + \frac{2}{16} = \frac{5}{8}$$

$$\checkmark \frac{5}{8} = \frac{5}{8}$$

$$10) \left( \frac{1}{m^2-1} = \frac{2}{m^2+m-2} \right) (m-1)(m+1)(m+2)$$

$$m+2 = 2(m+1)$$

$$m+2 = 2m+2$$

$$0 = m$$

Check

$$\frac{1}{-1} = \frac{2}{-2}$$

✓

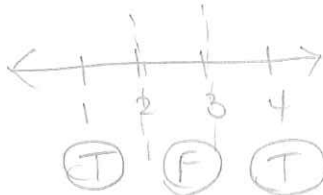
$$11) \left( \frac{5}{b-2} < 5 \right) (b-2)$$

$$5 < 5b - 10$$

$$b = 2$$

$$15 < 5b$$

$$3 < b$$



Check

$$x=1: \frac{5}{-1} < 5 \text{ True}$$

$$x=2.5: \frac{5}{.5} < 5 \text{ False}$$

$$x=4: \frac{5}{2} < 5 \text{ True}$$

$$x < 2 \text{ or } x > 3$$

$$12) \left( \frac{4}{a+3} > 2 \right) (a+3)$$

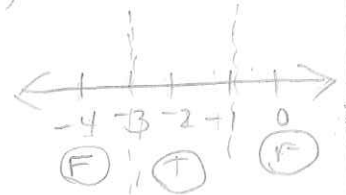
$$a = -3$$

$$4 > 2(a+3)$$

$$4 > 2a + 6$$

$$-2 > 2a$$

$$-1 > a$$



Check

$$x=-4: \frac{4}{-1} > 2 \text{ false}$$

$$x=-2: \frac{4}{1} > 2 \text{ true}$$

$$x=0: \frac{4}{3} > 2 \text{ false}$$

$$-3 < x < -1$$

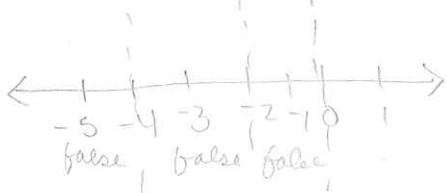
$$13) \left(-6 - \frac{8}{n} < n\right) n$$

$$-6n - 8 < n^2 \quad \underline{n=0}$$

$$0 < n^2 + 6n + 8$$

$$0 < (n+4)(n+2)$$

$$n = -4 \quad n = -2$$



Check

$$n = -5: -6 + \frac{8}{5} < -5 \text{ false}$$

$$n = -3: -6 + \frac{8}{3} < -5 \text{ false}$$

$$n = -1: -6 + 8 < -2 \text{ false}$$

$$n = 1: -6 - 8 < 1 \text{ true}$$

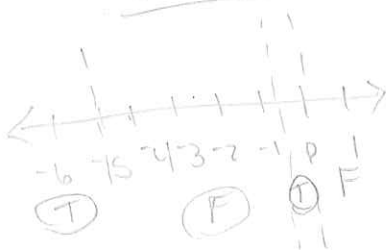
$$15) \left(\frac{5}{t} < \frac{9}{2t+1}\right) t (2t+1)$$

$$5(2t+1) < 9t \quad \underline{t=0}$$

$$10t + 5 < 9t$$

$$\underline{t < -5}$$

$$\underline{t = -\frac{1}{2}}$$



Check

$$t = -6$$

$$-\frac{5}{6} < \frac{9}{-11} \quad \text{true}$$

$$-.83 < -.81$$

$$t = -1$$

$$-5 < -9 \text{ false}$$

$$t = -0.25$$

$$-20 < -18 \text{ true}$$

$$t = 1$$

$$5 < 3 \text{ false}$$

$$14) \left(\frac{1}{3b} - \frac{3}{4b} > \frac{1}{6}\right) 12b$$

$$4 - 9 > 2b$$

$$-5 > 2b$$

$$\underline{-\frac{5}{2} > b}$$

$$\underline{b=0}$$

Check:

$$b = -3$$

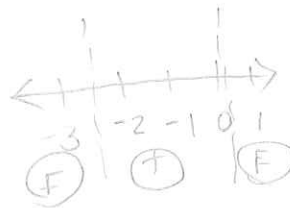
$$\frac{1}{-9} - \frac{3}{-12} > \frac{1}{6} \text{ false}$$

$$b = -1$$

$$-\frac{1}{3} + \frac{3}{4} > \frac{1}{6} \text{ true}$$

$$b = 1$$

$$\frac{1}{3} - \frac{3}{4} > \frac{1}{6} \text{ false}$$



$$\underline{-2.5 < x < 0}$$

$$16) \left(5 - \frac{3}{y} < \frac{7}{y}\right) y$$

$$\underline{y=0}$$

$$5y - 3 < 7$$

$$5y < 10$$

$$\underline{y < 2}$$



Check

$$x = -1$$

$$5 + 3 < -7 \text{ false}$$

$$x = 1$$

$$5 - 3 < 7 \text{ true}$$

$$x = 3$$

$$5 - 1 < \frac{7}{3} \text{ false}$$

$$\underline{0 < x < 2}$$

