

AK

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

Period: \_\_\_\_\_

### 1.2 Solving Equations in One Variable

Solve each equation.

1)  $\frac{1}{4}x + x = -3 + \frac{1}{2}x$

2)  $\frac{1}{3} + 2m = m - \frac{3}{2}$

1-6 check w/ graphing Calc  
by graphing both sides.

3)  $m + \frac{2}{3} = \frac{1}{4}m - 1$

4)  $\frac{2}{5}(x-2) = -3$

5)  $\frac{3}{4}(2x+1) = 2$

6)  $\frac{2}{3}(3x+1) = 5$

Get x terms alone on one side and factor.

7) Solve for x.

$\frac{bx}{3} + \frac{2}{3}$

$\frac{1}{2}x + ax - 4 = \frac{bx+2}{3}$

$\frac{1}{2}x + ax - \frac{bx}{3} = 4 + \frac{2}{3}$

$x(\frac{1}{2} + a - \frac{b}{3}) = \frac{14}{3}$

$x = \frac{14/3}{\frac{1}{2} + a - \frac{b}{3}} \cdot 6$

$x = \frac{28}{3 + a - 2b}$

8) Solve for x.

$\frac{awx+x-3}{2} = 0$

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$x(aw+1) = \frac{3}{2}$

$x = \frac{3}{aw+1}$

check for extraneous solutions!

$$9) \frac{1}{n-8} - 1 = \frac{7}{n-8}$$

$$\cancel{1} - (n-8) = 7$$

$$\cancel{1} - n + 8 = 7$$

$$9 - n = 7$$

$$n = 2$$

~~No sol.~~

$$11) 1 = \frac{v+2}{v-4} + \frac{7v-42}{v-4}$$

$$v-4 = v+2 + 7v-42$$

$$36 = 7v$$

$$\frac{36}{7} = v$$

$$13) 1 + \frac{x^2 - 5x - 24}{3x} = \frac{x-6}{3x}$$

$$3x + x^2 - 5x - 24 = x - 6$$

$$x^2 - 3x - 18 = 0$$

$$(x-6)(x+3) = 0$$

$$x = 6, -3$$

$$10) \frac{1}{r-2} + \frac{1}{r^2 - 7r + 10} = \frac{6}{r-2}$$

$$r-5 + 1 = (r-5)6$$

$$r-5 + 1 = 6r - 30$$

$$26 = 5r$$

$$\frac{26}{5} = r$$

$$12) \frac{r-4}{5r} = \frac{1}{5r} + 1$$

$$r-4 = 1 + 5r$$

$$-5 = 4r$$

$$-\frac{5}{4} = r$$

$$14) 1 = \frac{1}{x^2 + 2x} + \frac{(x-1)(x+2)}{x}$$

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

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

$$x = -1$$

Determine if the equation is an identity or conditional.

$$15) x^3 - 2x = x(x - \sqrt{2})(x + \sqrt{2})$$

✓ identity

$$16) 5(2x+1) = 10x+1$$

$$10x+5 = 10x+1$$

contradiction

$$17) (x+4)^2 - 5 = x^2 + 11$$

$$x^2 + 8x + 16 - 5 = x^2 + 11$$

conditional

$$18) |x| = x$$

conditional