

Assignment Unit 1 Review

Solve each equation.

1) $4(8k + 7) + 6(-5k - 2) = 5k - 5k$

$32k + 28 + -30k - 12 = 0$

$2k + 16 = 0$

$2k = -16$

$k = -8$

2) $\frac{2}{5} - \frac{12}{5}\left(\frac{5}{2}p + \frac{1}{4}\right) = \frac{1}{2}\left(p + \frac{5}{2}\right)$

$\frac{2}{5} - 6p - \frac{3}{5} = \frac{1}{2}p + \frac{5}{4}$

$-6p - \frac{1}{5} = \frac{1}{2}p + \frac{5}{4}$

$-\frac{13}{2}p = \frac{29}{20}$

$p = \frac{-29}{130}$

3) $-9|x + 10| - 8 = -80$

$-9|x + 10| = -72$

$|x + 10| = 8$

$x + 10 = 8$

$x + 10 = -8$

$x = -2$

$x = -18$

4) $2|5 + 10x| - 7 = 103$

$2|5 + 10x| = 110$

$|5 + 10x| = 55$

$5 + 10x = 55$

$10x = 50$

$x = 5$

$5 + 10x = -55$

$10x = -60$

$x = -6$

5) $-\frac{7}{5} \left| x + \frac{11}{9} \right| = -\frac{77}{45}$

$\left| x + \frac{11}{9} \right| = \frac{11}{9}$

$x + \frac{11}{9} = \frac{11}{9}$

$x + \frac{11}{9} = -\frac{11}{9}$

$x = 0$

$x = -\frac{22}{9}$

6) $\frac{\left| 2 - \frac{6}{7}b \right|}{5} = \frac{4}{7}$

$\left| 2 - \frac{6}{7}b \right| = \frac{20}{7}$

$2 - \frac{6}{7}b = \frac{20}{7}$

$-\frac{6}{7}b = \frac{6}{7}$

$b = -1$

$2 - \frac{6}{7}b = -\frac{20}{7}$

$-\frac{6}{7}b = -\frac{34}{7}$

$b = \frac{17}{3}$

7) $\frac{1}{4} \cdot \left| \frac{5}{4}x + \frac{49}{9} \right| + \frac{10}{9} = \frac{919}{288}$

$\frac{1}{4} \left| \frac{5}{4}x + \frac{49}{9} \right| = \frac{599}{288}$

$\left| \frac{5}{4}x + \frac{49}{9} \right| = \frac{599}{72}$

$\frac{5}{4}x + \frac{49}{9} = \frac{599}{72}$

$\frac{5}{4}x = \frac{23}{8}$

$x = \frac{23}{10}$

$\frac{5}{4}x + \frac{49}{9} = -\frac{599}{72}$

$\frac{5}{4}x = -\frac{991}{72}$

$x = -\frac{991}{90}$

Write the slope-intercept form of the equation of each line given the slope and y-intercept.

8) Slope = $\frac{2}{3}$, y-intercept = -3

$y = \frac{2}{3}x - 3$

Write the slope-intercept form of the equation of each line.

9) $2x - y = 7$

$y = 2x - 7$

10) $y + 5 = -5(x - 2)$

$y + 5 = -5x + 10$
 $y = -5x + 5$

Write the slope-intercept form of the equation of the line through the given point with the given slope.

11) through: $(-3, -4)$, slope = $\frac{2}{3}$

$y = \frac{2}{3}x + b$
 $-4 = \frac{2}{3}(-3) + b$
 $-4 = -2 + b$
 $-2 = b$

$y = \frac{2}{3}x - 2$

Write the slope-intercept form of the equation of the line through the given points.

12) through: $(-2, 3)$ and $(-3, -5)$

$\frac{-5 - 3}{-3 - (-2)} = \frac{-8}{-1} = 8$

$y = 8x + b$
 $3 = 8(-2) + b$
 $3 = -16 + b$
 $19 = b$

$y = 8x + 19$

Write the slope-intercept form of the equation of the line described.

13) through: $(0, 0)$, parallel to $y = \frac{1}{5}x - 4$

$y = \frac{1}{5}x$

14) through: $(-4, 0)$, perp. to $y = \frac{4}{3}x - 1$

$y = \frac{-3}{4}x + b$
 $0 = \frac{-3}{4}(-4) + b$
 $0 = 3 + b$
 $-3 = b$

$m = \frac{-3}{4}$

$y = \frac{-3}{4}x - 3$

Solve each equation by taking square roots.

15) $2x^2 + 3 = 19$

$2x^2 = 16$
 $x^2 = 8$

$x = \pm 2\sqrt{2}$

Solve each equation by factoring.

16) $x^2 - 2x = 3$

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

$x = 3$ $x = -1$

17) $7x^2 = 24 + 38x$

$\frac{168}{-42 + 4}$

$7x^2 - 38x - 24 = 0$

$7x^2 - 42x + 4x - 24 = 0$

$7x(x - 6) + 4(x - 6) = 0$

$(x - 6)(7x + 4) = 0$

$x = 6$ $x = -\frac{4}{7}$

Solve each equation with the quadratic formula.

18) $4x^2 + 9x = 63$

$4x^2 + 9x - 63 = 0$

$x = \frac{-9 \pm \sqrt{(9)^2 - 4(4)(-63)}}{2(4)}$

$x = \frac{-9 \pm \sqrt{1089}}{8}$

$x = \frac{-9 \pm 33}{8}$

$x = 3$ $x = -\frac{21}{4}$

Solve each equation by completing the square.

19) $5m^2 = 20m + 25$

$5m^2 - 20m = 25$

$m^2 - 4m = 5$

$m^2 - 4m + 4 = 5 + 4$

$(m-2)^2 = 9$

$m-2 = \pm 3$

$m=5$
 $m=-1$

20) $x^2 = 11x + 97$

$x^2 - 11x + \frac{121}{4} = 97 + \frac{121}{4}$

$(x - \frac{11}{2})^2 = \frac{509}{4}$

$x - \frac{11}{2} = \pm \frac{\sqrt{509}}{2}$

$-\frac{11}{2} \quad \frac{121}{4}$

$x = \frac{11 \pm \sqrt{509}}{2}$

Solve each equation. Remember to check for extraneous solutions.

21) $\frac{4}{k} = \frac{1}{4k} - 1$

$16 = 1 - 4k$

$15 = -4k$

$k = \frac{-15}{4}$

22) $\frac{4b-8}{b^2-5b} + \frac{1}{b^2-5b} = \frac{1}{b}$

$4b-8+1 = b-5$

$3b = 2$

$b(b-5)$

$b = \frac{2}{3}$

23) $\frac{m-5}{3m^2} + \frac{4m+16}{3m} = \frac{m-5}{m^2}$

$m-5 + (4m+16) = 3(m-5)$

$m-5 + 4m^2 + 16m = 3m - 15$

$4m^2 + 14m + 10 = 0$

$2(x+1)(2x+5) = 0$

$x = -1$
 $x = -\frac{5}{2}$

24) $\frac{5a+20}{5a^2+3a} + \frac{a+3}{a} = \frac{3}{5a^2+3a}$

$5a+20 + (a+3)(5a+3) = 3$

$5a+20 + 5a^2 + 15a + 3a + 9 = 3$

$5a^2 + 23a + 26 = 0$

$(x+2)(5x+13) = 0$

$x = -2$
 $x = -\frac{13}{5}$

25) $(\sqrt{2p-1})^2 = (3)^2$

$2p-1 = 9$

$2p = 10$

$p = 5$

26) $(\sqrt{-10+11v})^2 = v^2$

$v^2 = -10+11v$

$v^2 - 11v + 10 = 0$

$(v-10)(v-1) = 0$

$v = 10 \quad v = 1$

27) $-v + \sqrt{7v+2} = 2$

$(\sqrt{7v+2})^2 = (v+2)^2$

$7v+2 = v^2 + 4v + 4$

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

$(v-2)(v-1) = 0$

$v = 2$
 $v = 1$

28) $(\sqrt{7-r})^2 = (-4 + \sqrt{4r+1})^2$

$7-r = 16 - 8\sqrt{4r+1} + 4r + 1$

$7-r = 17 + 4r - 8\sqrt{4r+1}$

$(-10-5r)^2 = (-8\sqrt{4r+1})^2$

$100 - 100r + 25r^2 = 64(4r+1)$

$25r^2 + 100r + 100 = 256r + 64$

$25r^2 - 156r + 36 = 0$ → or quadratic

$25r^2 - 6r - 150r + 36 = 0$

$r(25r-6) - 6(25r-6) = 0$

$(r-6)(25r-6) = 0$

$r = 6 \quad r = \frac{6}{25}$

$\frac{900}{-6} = -150$

$\frac{156 \pm \sqrt{24336 - 4(25)(36)}}{2(25)}$

$\frac{156 \pm \sqrt{20736}}{50} = \frac{156 \pm 144}{50}$

29) $\sqrt{4-n} - \sqrt{6n+1} = -5$

$(\sqrt{4-n})^2 = (\sqrt{6n+1} - 5)^2$

$4-n = 6n+1 - 10\sqrt{6n+1} + 25$

$(-22-7n)^2 = (-10\sqrt{6n+1})^2$

$484 + 308n + 49n^2 = 100(6n+1)$

$49n^2 + 308n + 484 = 600n + 100$

$49n^2 - 292n + 384 = 0$

$49n^2 - 196n - 96n + 384 = 0$

$49n(n-4) - 96(n-4) = 0$

$(n-4)(49n-96) = 0$

$n = 4$
 $n = \frac{96}{49}$

→ or quadratic

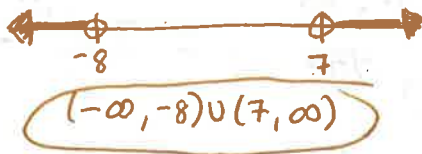
$\frac{292 \pm \sqrt{85264 - 4(49)(384)}}{2(49)}$

$\frac{292 \pm \sqrt{10000}}{98}$

$\frac{292 \pm 100}{98} = \frac{292 \pm 100}{98}$

Solve each compound inequality.

30) $-8m - 2 > 62$ or $1 - 6m < -41$
 $-8m > 64$ $-6m < -42$
 $m < -8$ or $m > 7$



Solve each inequality.

32) $|8 + x| \geq -1$



34) $10|8 + p| + 1 > 31$

$10|8+p| > 30$
 $|8+p| > 3$
 $8+p > 3$ $8+p < -3$
 $p > -5$ or $p < -11$



$(-\infty, -11) \cup (-5, \infty)$

31) $-9x + 9 > -10x - 1 \geq 8 - 7x$

$9 > -x - 1 \geq 8 + 2x$
 $9 > -x - 1$ and $-x - 1 \geq 8 + 2x$
 $10 > -x$ $-9 \geq 3x$
 $-10 < x$ and $-3 \leq x$



$[-10, -3]$

33) $|8n| + 9 \leq 1$

$18n \leq -8$

no solution

35) $|9x + 9| - 1 < 62$

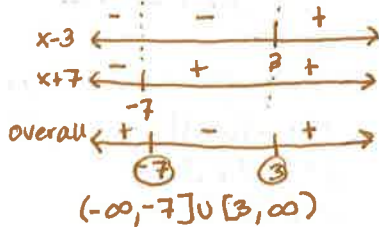
$|9x+9| < 63$
 $9x+9 < 63$ $9x+9 > -63$ $(-8, 6)$
 $9x < 54$ $9x > -72$
 $x < 6$ AND $x > -8$



Solve each of the following inequalities.

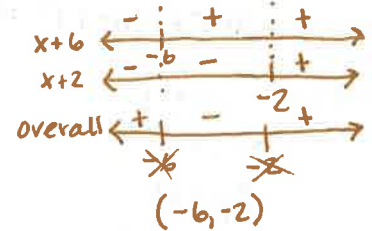
36) $u^2 + 4u \geq 21$

$u^2 + 4u - 21 \geq 0$
 $(u-3)(u+7) \geq 0$



37) $x^2 + 8x + 12 < 0$

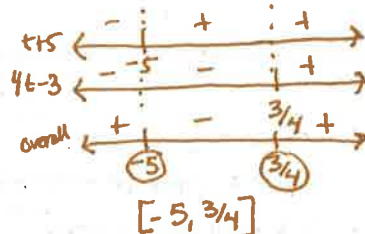
$(x+6)(x+2) < 0$



38) $4t^2 \leq 15 - 17t$

$4t^2 + 17t - 15 \leq 0$

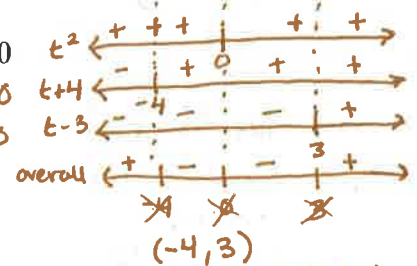
$4t^2 + 20t - 3t - 15 \leq 0$
 $4t(t+5) - 3(t+5) \leq 0$
 $(t+5)(4t-3) \leq 0$



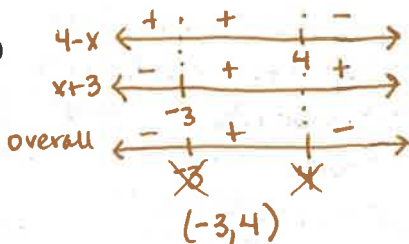
39) $t^4 + t^3 - 12t^2 < 0$

$t^2(t^2 + t - 12) < 0$

$t^2(t+4)(t-3) < 0$

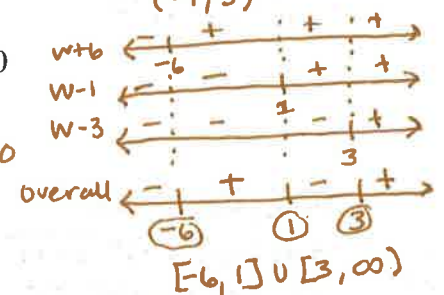


40) $\frac{4-x}{x+3} > 0$



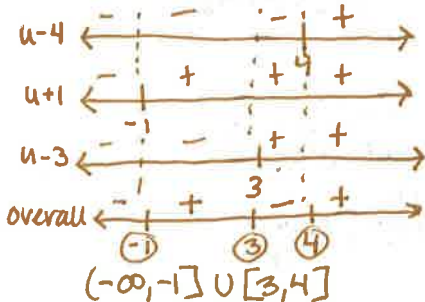
41) $\frac{w^2 + 5w - 6}{w - 3} \geq 0$

$\frac{(w+6)(w-1)}{(w-3)} \geq 0$



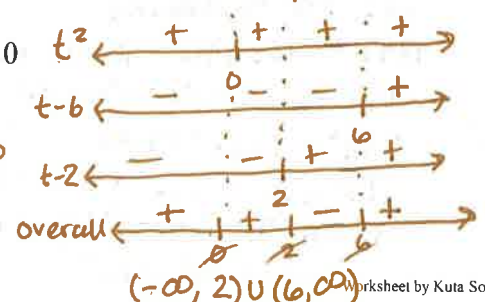
42) $u \leq \frac{4}{u-3}$

$\frac{u(u-3)}{u-3} - \frac{4}{u-3} \leq 0$
 $\frac{u^2 - 3u - 4}{u-3} \leq 0$
 $\frac{(u-4)(u+1)}{(u-3)} \leq 0$



43) $\frac{t^3 - 6t^2}{t-2} > 0$

$\frac{t^2(t-6)}{t-2} > 0$



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$$24) \frac{5a+20}{5a^2+3a} + \frac{a+3}{a} = \frac{3}{5a^2+3a}$$

$$25) \sqrt{2p-1} = 3$$

$$26) v = \sqrt{-10+11v}$$

$$27) -v + \sqrt{7v+2} = 2$$

$$28) \sqrt{7-r} = -4 + \sqrt{4r+1}$$

$$29) \sqrt{4-n} - \sqrt{6n+1} = -5$$

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39) $t^4 + t^3 - 12t^2 < 0$

40) $\frac{4 - x}{x + 3} > 0$

41) $\frac{w^2 + 5w - 6}{w - 3} \geq 0$

42) $u \leq \frac{4}{u - 3}$

43) $\frac{t^3 - 6t^2}{t - 2} > 0$