

- 4) $\{y|y \leq -1/12\}$ 44) $\{x| -17/3 < x < 3\}$
 12) $\{x| -5 < x \leq 3\}$ 48) $\{x| x < -5/2 \text{ or } x > 15/2\}$
 20) $\{x| -1 \leq x < 2\}$ 54) $\{\}$
 22) $\{x| 7/4 < x \leq 13/6\}$
 28) $\{x| x \leq -3 \text{ or } x \geq -7/5\}$

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From Text, pg 250

do together in class

62. Income Plans. Karen can be paid in one of two ways for selling insurance policies:

Plan A: A salary of \$750 per month, plus a commission of 10% of sales;

Plan B: A salary of \$1000 per month, plus a commission of 8% of sales in excess of \$2000

For what amount of monthly sales is plan A better than plan B if we can assume that sales are always more than \$2000?

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63. Income Plans. Curt can be paid in one of two ways for the furniture he sells:

Plan A: A salary of \$900 per month, plus a commission of 10% of sales;

Plan B: A salary of \$1200 per month, plus a commission of 15% of sales in excess of \$8000

For what amount of monthly sales is plan B better than plan A if we can assume that Curt's sales are always more than \$8000?

Plan A: $y = 900 + .1x$

Plan B: $y = 1200 + .15(x - 8000)$

$$1200 + .15x - 1200x \geq 900 + .1x$$

$$.05x \geq 900$$

$$x \geq 18000$$

Sales of \$18,000 or more plan B is better

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Solve for x. Show all work as demonstrated in class. Include number line graphs when required.

1. $\frac{5}{x^2+x} = \frac{x+4}{x} + \frac{1}{x^2+x}$ $x \neq 0, -1$ $x(x+1)$
 $5 = (x+1)(x+4) + 1$
 $5 = x^2 + 5x + 5$
 $x^2 + 5x = 0$
 $x(x+5) = 0$ $\{-5\}$
 $x = 0$ $x = -5$

2. $1 = \frac{1}{x^2+2x} + \frac{x-1}{x}$ $x \neq 0, -2$ $x(x+2)$
 $x^2 + 2x = 1 + (x+2)(x-1)$
 $x^2 + 2x = 1 + x^2 + x - 2$
 $x = -1$
 $\{-1\}$

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3. $(x-3)^2 = (30-2x)^2$
 $x^2 - 6x + 9 = 30 - 2x$
 $x^2 - 4x - 21 = 0$
 $(x-7)(x+3) = 0$ $\{-7\}$
 $x = 7$ $x = -3$
 $\checkmark$ $7-3 = \sqrt{30-14}$ $-3-3 = \sqrt{30+6}$
 $4 = \sqrt{16}$ $-6 = \sqrt{36}$
 $4 = 4$ $-6 = -6$

4. $\sqrt{3x+4} - \sqrt{2x+1} = 1$
 $(\sqrt{3x+4})^2 = (\sqrt{2x+1} + 1)^2$
 $3x+4 = 2x+1 + 2\sqrt{2x+1} + 1$
 $(x+2)^2 = (2\sqrt{2x+1})^2$
 $x^2 + 4x + 4 = 4(2x+1)$
 $x^2 - 4x = 0$
 $x(x-4) = 0$ $\{0, 4\}$
 $x = 0$ $x = 4$
 $\sqrt{0+4} - \sqrt{0+1} = 1$ $\sqrt{12+4} - \sqrt{8+1} = 1$
 $2 - 1 = 1$ $4 - 3 = 1$
 $1 = 1$ $1 = 1$

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5. $9 + 2x < 7$ or $7 - 5x \leq -8$
 $2x < -2$ $-5x \leq -15$
 $x < -1$ $x \geq 3$
 $\{x| x < -1 \text{ or } x \geq 3\}$
 $(-\infty, -1) \cup [3, \infty)$

6. $5x + 10 \leq 4x - 17$ And $-4x - 17 < 2x$
 $5x + 10 \leq 4x - 17$ $-4x - 17 < 2x$
 $9x \leq -27$ $-2x < 26$
 $x \leq -3$ $x > -13$
 $\{x| -13 < x \leq -3\}$
 OR $(-13, -3]$

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7. $-\frac{2}{3}(7x-2) > 6$
 $-14x + 4 > 18$
 $-14x > 14$
 $x < -1$



$\{x | x < -1\}$
 or $(-\infty, -1)$

8. $-\frac{1}{3}(5x-9) + 4 \leq -2$
 $-\frac{1}{3}(5x-9) \leq -6$
 $5x-9 \geq 18$
 $5x \geq 27$
 $x \geq \frac{27}{5}$



$\{x | x \geq \frac{27}{5}\}$
 $[\frac{27}{5}, \infty)$

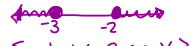
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9. $4|6-2x| + 8 \leq 24$
 $4|6-2x| \leq 16$
 $|6-2x| \leq 4$
 $6-2x \leq 4$ $-6+2x \leq 4$
 $-2x \leq -2$ $2x \leq 10$
 $x \geq 1$ $x \leq 5$



$\{x | 1 \leq x \leq 5\}$
 or $[1, 5]$

10. $|2x+5| - 6 \geq -5$
 $|2x+5| \geq 1$
 $2x+5 \geq 1$ $-2x-5 \geq 1$
 $2x \geq -4$ $-2x \geq 6$
 $x \geq -2$ $x \leq -3$



$\{x | x \leq -3 \text{ or } x \geq -2\}$
 $(-\infty, -3] \cup [-2, \infty)$

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11. $|1-4x| \geq -3$
 $(-\infty, \infty)$
 or $\{x | x \in \mathbb{R}\}$

12. $7\left|\frac{x}{3}\right| - 9 < 12$
 $7\left|\frac{x}{3}\right| < 21$
 $\left|\frac{x}{3}\right| < 3$
 $\frac{x}{3} < 3$ $-\frac{x}{3} < 3$
 $x < 9$ $x > -9$



$\{x | -9 < x < 9\}$
 or $(-9, 9)$

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