Review Exercises (Ch. 12)

1) 

3) $(-\infty,-2]\quad(5,\infty)$

5) The set of temperatures T that is best for business is $\{T : T < 32°\text{F} \text{ or } T > 75°\text{F}\}$.

7)

a) $125 - 5x \geq 50$ ← At least 50 people must attend
$125 - 5x \leq 100$ ← No more than 100 people can attend

b) $125 - 5x \geq 50$ and $125 - 5x \leq 100$
$-5x \geq -75$ and $-5x \leq -25$
$x \leq 15$ and $x \geq 5$

The cover charge should be no more than \$15 and no less than \$5.

c) 

9) A⇔3, B⇔1, C⇔2

11) Graph $Y_1 = ⁻4X\text{^}2 + 25X$, $Y_2 = 10$
A good window: $-1 \leq X \leq 9$; Xscl = 1; $0 \leq Y \leq 50$; Yscl = 5

Solution set: $(0.43, 5.82)$ (boundary points are approximate)

$x = 0$: $-4(0)^2 + 25(0) > 10$
$-4(0) + 25(0) > 10$
$0 > 10$
False: $x = 0$ is not a solution and does not lie in the interval $(0.43, 5.82)$.

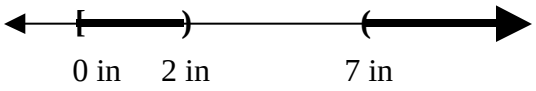
$x = 3$: $-4(3)^2 + 25(3) > 10$
$-4(9) + 75 > 10$
$-36 + 75 > 10$
$39 > 10$
True: $x = 3$ is a solution and is contained in the interval $(0.43, 5.82)$.

$x = 6$: $-4(6)^2 + 25(6) > 10$
$-4(36) + 25(6) > 10$
$-144 + 150 > 10$

$6 > 10$

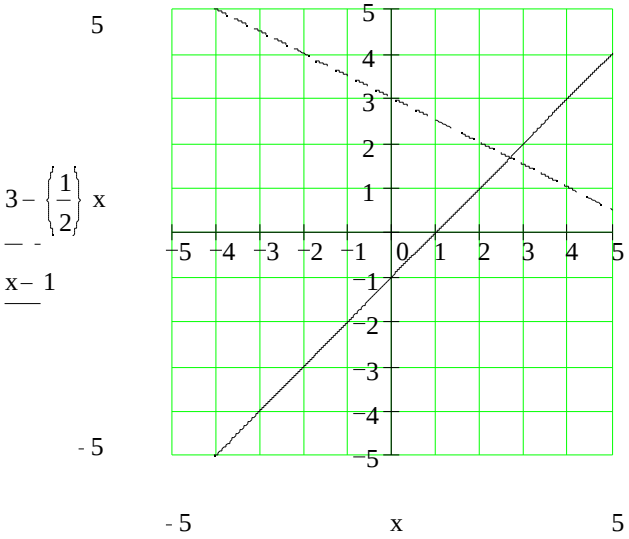
False: $x = 6$ is not a solution and does not lie in the interval $(0.43, 5.82)$.

13) $|x - 5| > 2$

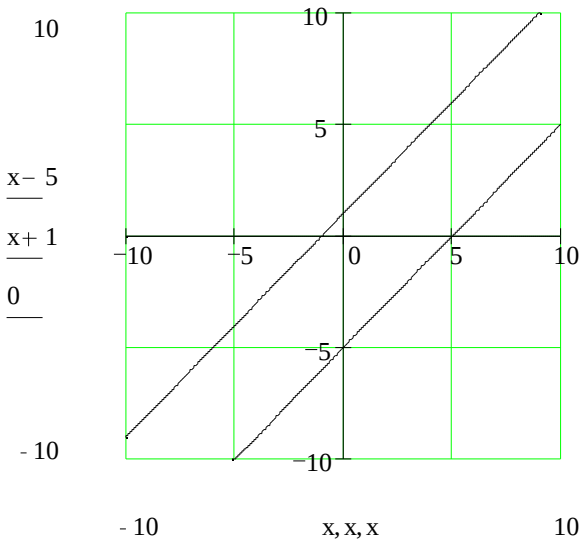


15) Only A and C are solutions.

17)



19)



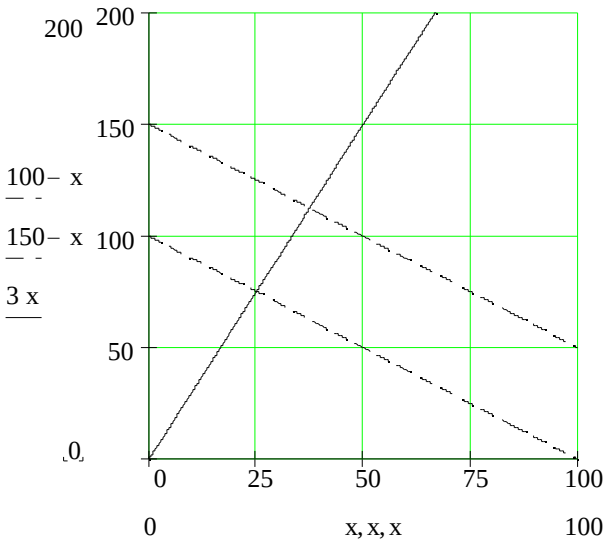
21)

a) $100 < x + y < 150$ ← Sum of no's is more than 100 and less than 150

$y \geq 3x$ ← Larger number is a least 3 times the smaller one

b) $x + y > 100$ and $x + y < 150$ and $y \geq 3x$

$y > 100 - x$ and $y < 150 - x$ and $y \geq 3x$



c) Answers will vary. (25, 100) and (0, 110) are solutions. (50, 0) and (75, 50) are not solutions.

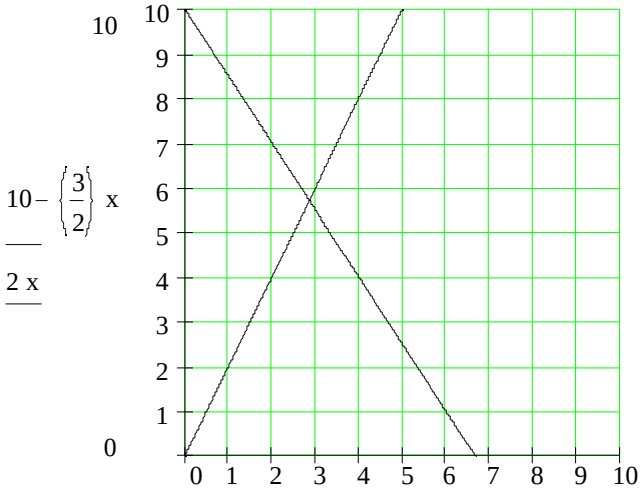
23)

a) $30x + 20y \leq 200$

b) $y \geq 2x$

c) You can't buy a negative number of shirts or pants.

d)



e) Answers will vary. (0, 6), (2, 5), and (2, 4) are solutions.