

Book: p 259-# 7, 9, 11, 19, 21, 23,  
27-41 odds, 45

Review: p 259-# 73, 75, 79  
p 266-# 71  
p 177-# 34, 35, 40

Alg 2 - Assignment 15

New page 259:

7.  $(3a)^4 = 3^4 a^4 = 81a^4$

9.  $\frac{40x^4}{-5x^2} = \frac{40x^{4-2}}{-5} = -8x^2$

11.  $\frac{16s^6t^5}{(2s^2t)^2} = \frac{16s^6t^5}{2^2s^{2 \cdot 2}t^2} = \frac{16s^6t^5}{4s^4t^2} = \frac{16s^{6-4}t^{5-2}}{4} = 4s^2t^3$

19.  $b^3 \cdot b^5 = b^{3+5} = b^8$

21.  $(m^3)^3 = m^{3 \cdot 3} = m^9$

23.  $\frac{an^6}{n^5} = an^{6-5} = an$

27.  $(-3r^2s)^2(2rs^3) = (-3)^2 r^{2 \cdot 2} s^2 \cdot 2rs^3 = 9r^4s^2 \cdot 2rs^3 = 18r^{4+1}s^{2+3} = 18r^5s^5$

29.  $(2mn^2)(5m^2n) = 2 \cdot 5 m^{1+2} n^{2+1} = 10m^3n^3$

31.  $\left(\frac{-3m^2n^3}{4}\right)\left(\frac{8mn^4}{9}\right) = \frac{-3 \cdot 8 m^{2+1} n^{3+4}}{4 \cdot 9} = \frac{-2m^3n^7}{3}$

33.  $4x(-3x)^3 = 4x \cdot (-3)^3 x^3 = 4x \cdot -27x^3 = 4(-27)x^{1+3} = -108x^4$

35.  $5mn^2(m^3n)(-3p^2) = 5(-3)m^{1+3}n^{2+1}p^2 = -15m^4n^3p^2$

37.  $\frac{-6x^2y^3z^3}{24x^2y^7z^3} = \frac{-6x^{2-2}y^{3-7}z^{3-3}}{24} = \frac{-1x^0y^{-4}z^0}{4} = \frac{-1}{4y^4}$

39.  $\frac{-15m^5n^8(m^3n^2)}{45m^4n} = \frac{-15m^{5+3}n^{8+2}}{45m^4n} = \frac{-15m^8n^{10}}{45m^4n} = \frac{-15m^{8-4}n^{10-1}}{45} = \frac{-1m^4n^9}{3}$

41.  $\left(\frac{5a^3b}{10a^2b^2}\right)^4 = \left(\frac{5a^{3-2}b^{1-2}}{10}\right)^4 = \left(\frac{a}{2b}\right)^4 = \frac{a^4}{2^4b^4} = \frac{a^4}{16b^4}$

45.  $\frac{8}{m^0+n^0} = \frac{8}{1+1} = \frac{8}{2} = 4$

PACKET

1.  $(-2y^5)^2 = (-2)^2 y^{5 \cdot 2} = 4y^{10}$

2.  $\frac{1}{5}(-5a^2b^3)^2(abc)^2 = \frac{1(-5)^2 a^{2 \cdot 2} b^{3 \cdot 2} c^{2 \cdot 2}}{5} = \frac{1(25)a^4b^6a^2b^2c^2}{5} = 5a^{4+2}b^{6+2}c^2 = 5a^6b^8c^2$

$$3. (m^4 n^6)^4 (m^3 n^2 p^5)^6 = m^{4 \cdot 4} n^{6 \cdot 4} m^{3 \cdot 6} n^{2 \cdot 6} p^{5 \cdot 6} = m^{16} n^{24} m^{18} n^{12} p^{30} \\ = m^{16+18} n^{24+12} p^{30} = m^{34} n^{36} p^{30}$$

$$4. \left(\frac{3}{6} y^2\right)^2 (10y^2)^3 = \frac{3^2}{10^2} y^{2 \cdot 2} \cdot 10^3 y^{2 \cdot 3} = \frac{9}{100} y^4 \cdot 1000 y^6 = 90 y^{4+6} = 90 y^{10}$$

$$5. \left(\frac{2}{5} a\right)^2 (25a) (13b) \left(\frac{1}{13} b^4\right) = \frac{2^2}{5^2} a^2 (25a) (b) (b^4) = 4 a^{2+1} b^{1+4} = 4 a^3 b^5$$

**REVIEW**

$$6. \frac{2-3x}{5} \geq \frac{2}{5}$$

~~$$\frac{2-3x}{5} > \frac{2}{5} \quad \text{or} \quad \frac{2-3x}{5} < \frac{-2}{5}$$~~

$$\frac{2-3x}{5} \geq \frac{2}{5} \quad \frac{2-3x}{5} \leq \frac{-2}{5}$$

$$\frac{-3x}{3} \geq \frac{0}{3} \quad \frac{-3x}{-3} \leq \frac{-4}{-3}$$

$$x \leq 0 \quad \text{OR} \quad x \geq \frac{4}{3}$$

$$7. \begin{cases} (2a+5b=-13) \cdot 3 \\ (3a-4b=38) \cdot -2 \end{cases} \rightarrow \begin{cases} 6a+15b=-39 \\ -6a+8b=-76 \end{cases}$$

$$(6, -5)$$

$$\frac{23b}{23} = \frac{-715}{23}$$

$$b = -5$$

$$2a+5(-5)=-13$$

$$2a-25=-13$$

$$\frac{2a}{2} = \frac{12}{2}$$

$$a=6$$

$$8. \begin{cases} -x+y=5 \\ 2x+4y=38 \end{cases}$$

$$y = x+5$$

$$\frac{4y}{4} = \frac{-2x+38}{4} \rightarrow y = \frac{-2x+38}{4}$$

$$(3, 8)$$

$$9. \frac{1}{3}x - \frac{1}{2}y = -8$$

$$-\frac{1}{3}x \quad -\frac{1}{3}x$$

$$\frac{-1/2y}{-1/2} = \frac{-1/3x-8}{-1/2}$$

$$y = \frac{(-1/3x-8)}{-1/2}$$

$$\frac{3}{5}x + \frac{5}{6}y = -4$$

$$-\frac{3}{5}x \quad -\frac{3}{5}x$$

$$\frac{5/6y}{5/6} = \frac{-3/5x-4}{5/6}$$

$$y = \frac{(-3/5x-4)}{5/6}$$

$$(-15, 6)$$

FIVE STAR  
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### Alg 2 - Assignment 15, Continued

(x2) 10.  $x$  = cassette at \$9.95     $y$  = cassette at \$14.95

# of tapes:  $x + y = 650 \rightarrow x = 650 - y$

Revenue:  $9.95x + 14.95y = 7,717.50$

$$9.95(650 - y) + 14.95y = 7,717.50$$

$$\begin{array}{r} 6467.50 - 9.95y + 14.95y = 7717.50 \\ -6467.50 \phantom{- 9.95y} \phantom{+ 14.95y} \\ \hline \phantom{6467.50} 5y = 1250 \end{array}$$

$$\frac{5y}{5} = \frac{1250}{5} \rightarrow y = 250 \quad x = 650 - 250 = 400$$

400 cassettes at \$9.95, and 250 cassettes at \$14.95.

FIVE STAR  
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11.  $x$  = amount at 5%     $y$  = amount at 7%

amt. invested:  $2x = y$

Interest earned:  $.05x + .07y = 665$

$$.05x + .07(2x) = 665$$

$$.05x + .14x = 665$$

$$\frac{.19x}{.19} = \frac{665}{.19} \rightarrow x = 3500, \quad y = 2(3500) = 7000$$

He invested \$3500 at 5%, and \$7000 at 7%.

FIVE STAR  
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12.  $x$  = pages without charts     $y$  = pages with charts

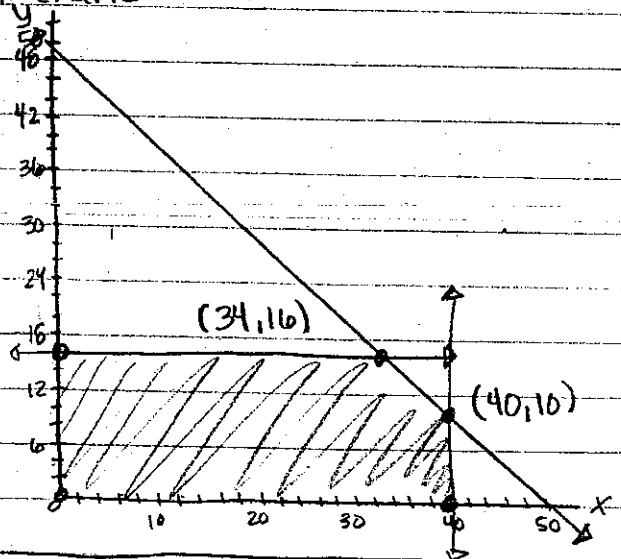
# of pages:  $x + y \leq 50$

$$0 \leq x \leq 40$$

$$0 \leq y \leq 16$$

$$f(x, y) = 3.50x + 8.00y$$

(x, y)	f(x, y)
(0, 0)	$3.5(0) + 8(0) = 0$
(40, 0)	$3.5(40) + 8(0) = 140$
(40, 16)	$3.5(40) + 8(16) = 220$
(34, 16)	$3.5(34) + 8(16) = 247$
(0, 16)	$3.5(0) + 8(16) = 128$



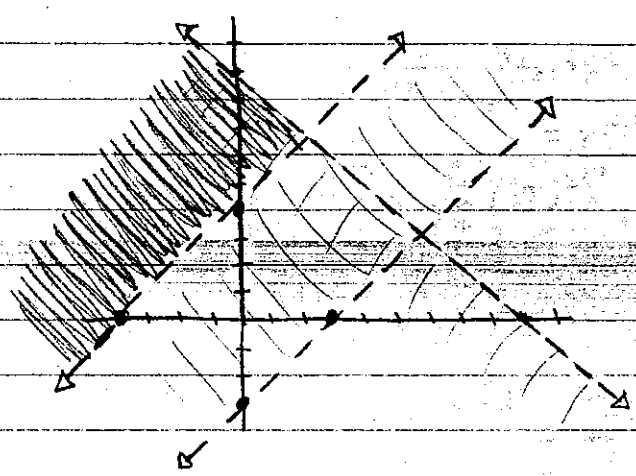
Max cost is \$247 with 34 pages without graphs and 16 pages with graphs.

FIVE STAR  
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FIVE STAR  
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p259

73.  $x+y < 9$     x-int: (9,0)  
                           y-int: (0,9)  
 $x-y < 3$         x-int: (3,0)  
                           y-int: (0,-3)  
 $y-x > 4$         x-int: (-4,0)  
                           y-int: (0,4)



(x2)

75. passes through (2,2) and parallel to  $4x - y + 3 = 0$

$$y = mx + b$$

$$2 = 4(2) + b$$

$$2 = 8 + b$$

$$\frac{-8 - 8}{-8 - 8} = \frac{-16}{-16} = 1$$

$$m = 4$$

$$y = 4x - 6$$

79.  $15 - 3(2) \div 8 - 11$   
 $= 15 - 6 \div 8 - 11$

$= 15 - \frac{6}{8} - 11 = 15 - \frac{3}{4} - 11 = 15 \cdot \frac{4}{4} - \frac{3}{4} - 11 \cdot \frac{4}{4} = \frac{60}{4} - \frac{3}{4} - \frac{44}{4} = \frac{57 - 44}{4} = \frac{13}{4}$

p266

71.  $6x + 4y = 80$   
 $x - 7y = -2$

$$\frac{+7y \quad +7y}{x = 7y - 2}$$

$6(7y - 2) + 4y = 80$   
 $42y - 12 + 4y = 80$

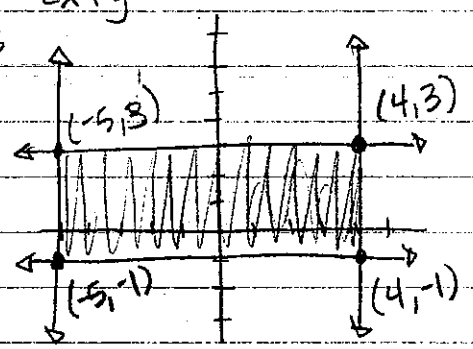
$\frac{46y}{46} = \frac{92}{46} \rightarrow y = 2$

$x = 7(2) - 2$   
 $x = 14 - 2$   
 $x = 12$

(12, 2)

p177

84.  $f(x,y) = -2x + y$   
 $x \geq -5$   
 $x \leq 4$   
 $y \geq -1$   
 $y \leq 3$



$f(x,y) = -2x + y$

$(-5, 3)$	$-2(-5) + 3 = 10 + 3 = 13$
$(4, 3)$	$-2(4) + 3 = -8 + 3 = -5$
$(-5, -1)$	$-2(-5) - 1 = 10 - 1 = 9$
$(4, -1)$	$-2(4) - 1 = -8 - 1 = -9$

Max = 13 at (-5, 3)  
 Min = -9 at (4, -1)

(x2)

Alg 2 - Assignment 15 continued

35.  $f(x,y) = 3x + 2y$

$x \geq 0$

$y \geq 0$

(x2)

$x + 3y \leq 15$

x-int: (15,0)

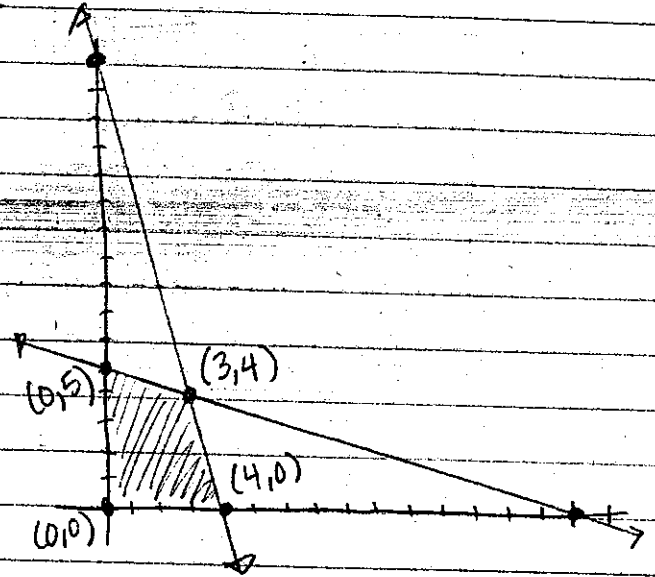
y-int: (0,5)

$4x + y \leq 16$

x-int: (4,0)

y-int: (16,0)

(x,y)	$3x + 2y$
(0,0)	$3(0) + 2(0) = 0$
(4,0)	$3(4) + 2(0) = 12$
(3,4)	$3(3) + 2(4) = 17$
(0,5)	$3(0) + 2(5) = 10$



Max = 17 at (3,4), Min = 0 at (0,0)

40.  $x =$  student tickets

$y =$  nonstudent tickets

$f(x,y) = 3x + 4y$

$x + y \geq 1000$

x-int: (1000,0)

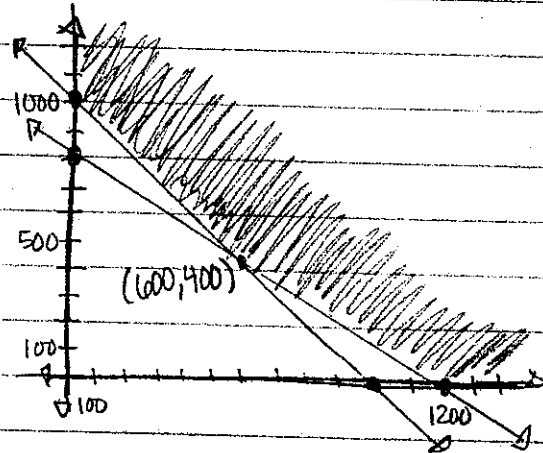
y-int: (0,1000)

$4x + 6y \geq 4800$

x-int: (1200,0)

y-int: (0,800)

(x,y)	$3x + 4y$
(0,1000)	$3(0) + 4(1000) = 4000$
(1200,0)	$3(1200) + 4(0) = 3600$
(600,400)	$3(600) + 4(400) = 3400$



Min amount is \$3400

Max amount is unbounded.

