

Algebra 1
Final Exam Study Guide

1. a. Which property is illustrated by:
 $(-3 + 7) + 5 = -3 + (7 + 5)$

b. Which property is illustrated by:
 $(-3 + x) + 5 = -3 + (x + 5)$

c. Which property is illustrated by:
 $(y + x) + w = y + (x + w)$

d. Which property is illustrated by:
 $(-3 + x) + 5 = (x + -3) + 5$

Ca. Alg. 1 (1)

2. a. Which property is illustrated by:
 $y^2 + x + 9 = x + y^2 + 9$

b. Which property is illustrated by:
 $-3-5y-8x = -8x-3-5y$

c. Which property is illustrated by:
 $-3(x-7y) = -3x + 21y$

d. Which property is illustrated by:
 $x(x^2 - 7x) = x^3 - 7x^2$

e. Which property is illustrated by:
 $x^2(x^3 - 7x^2) = x^5 - 7x^4$

f. Which property is illustrated by:
 $3x = x \cdot 3$

Ca. Alg. 1 (1)

3. a. Which of the following will not result in an integer?

- A. $5 \cdot 4$
- B. $5 - 7$
- C. $8 + 6$
- D. $9 \div 11$

- b. Which of the following will not result in an integer?

- A. $7(x)$
- B. $3 - 3$
- C. $9 + (-3)$
- D. $6 \div 100$

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c. Which of the following will not result in an integer?

- A. $3(-28)$
- B. $3 - 28$
- C. $3 + 28$
- D. $3 \div 28$

Ca. Alg. 1 (I)

4. a. What is the best classification for $\sqrt{64}$?

- I. Real number
- II. Rational number
- III. Irrational number
- IV. Whole number

- A. I, II, and IV
- B. II only
- C. I and II
- D. III

b. What is the best classification for $\sqrt{169}$?

- I. Real number
- II. Rational number
- III. Irrational number
- IV. Whole number

- A. I, II, and IV
- B. II only
- C. I and II
- D. III

c. What is the best classification for $-\sqrt{5}$?

- I. Real number
- II. Rational number
- III. Irrational number
- IV. Whole number

- A. I, II, and IV
- B. II only
- C. I and III
- D. III

Ca. Alg. 1 (I)

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5. a. Use the appropriate properties to simplify the expression: $\frac{(-4)(-5)-15}{5}$
- b. Use the appropriate properties to simplify the expression: $\frac{(-8)(-5)-30}{5}$
- c. Use the appropriate properties to simplify the expression: $\frac{(-5)(25)-30}{-5}$
- d. Use the appropriate properties to simplify the expression: $\frac{(-x)(x)-30x}{-6x}$
- e. Use the appropriate properties to simplify the expression: $\frac{(5)7+65}{10}$

Ca. Alg. 1 (1)

6. a. $|x| = 7$
- b. $|x| = 4$
- c. $|x| = y$
- d. $|x| = 121$
- e. $|x| = 33$
- f. $|x| = -1$

Ca. Alg. 1 (3)

7. a. $|x - 2| = 3$
- b. $|x + 7| = 13$
- c. $|x - 2| - 3 = 5$

Ca. Alg. 1 (3)

8. a. $2|4x - 8| = 16$
- b. $3|3x + 6| = 18$
- c. $7|3x + 9| = 42$

Ca. Alg. 1 (3)

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9. a. $3|3x+6| = -18$

b. $|3x+5| = -7$

Ca. Alg. 1 (3)

10. a. $|x-6|-3 = 15$

b. $|5x+10|+20 = 25$

c. $|7x+14|-21 = 77$

Ca. Alg. 1 (3)

11. a. $|3x+6| > 103$

b. $|5x+15| > 35$

c. $2|3x-6| < 102$

d. $-8|3x+16| < -96$

Ca. Alg. 1 (3)

Graph of the absolute value inequality:

12. a. $|x| \geq 4$

<+++++++>
-4 -3 -2 -1 0 1 2 3 4 5

b. $|x| \geq 3$

<+++++++>
-4 -3 -2 -1 0 1 2 3 4 5

c. $|x| \leq 2$

<+++++++>
-4 -3 -2 -1 0 1 2 3 4 5

d. $|x| \geq 0$

<+++++++>
-4 -3 -2 -1 0 1 2 3 4 5

Ca. Alg. 1 (3)

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Solve

13. a. $|2x| \geq 14$

b. $|4x| \geq 12$

c. $|5x| \geq 125$

d. $|2x| \leq 12$

Ca. Alg. 1 (3)

14. a. $|2x + 7| \geq 19$

b. $|4x + 6| \leq 26$

c. $|2x + 4| > 26$

d. $|7x + 13| < 21$

Ca. Alg. 1 (3)

15. a. Which of the following is equivalent to $-3x + 8 < x + 8$

- A. $4x + 8 < 8$
- B. $4x < 0$
- C. $-4x > 16$
- D. $-4x > 0$

b. Which of the following is equivalent to $5x + 22 > 3x + 17$

- A. $2x < 39$
- B. $2x > 39$
- C. $2x > -5$
- D. $2x < -5$

c. Which of the following is equivalent to $6x + 25y < -7x + 29y$

- A. $13x < 4y$
- B. $13x > 4y$
- C. $13x > 54y$
- D. $13x < 4y^2$

Ca. Alg. 1 (4)

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Solve for x

16. a. $3x-15 = 96$

b. $2x+7 = 21$

c. $5x+15 = 50$

d. $9x-63 = 9$

e. $6x+12 = 66$

Ca. Alg. 1 (4)

17. a. $\frac{3x}{4} \leq -6$

b. $\frac{2x}{8} \geq 4$

c. $\frac{35x}{7} < 25$

d. $\frac{-5}{-4} \leq 100$

Ca. Alg. 1 (4), (5)

18. a. $\frac{x}{4} + 7 = 23$

b. $\frac{x}{6} - 7 = 17$

c. $\frac{x}{12} - 3 \leq 141$

Ca. Alg. 1 (4), (5)

19. a. $2(x+5)-3(3x+7) = 66$

b. $-5(x+2)+9(3x+7) = -13$

c. $9(x+11)+3(x-3) = 108$

d. $3(2x+3)-7(5x-6) = -7$

Ca. Alg. 1 (4), (5)

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20. a. $3x+5 = 5x-33$
b. $32y+1 = 5y+109$
c. $5x-9 = 9x+7$
d. $4x-27 = 33-2x$
e. $9x+34 = 7x+100$
f. $5x-55 = 44-6x$

Ca. Alg. 1(4), (5)

21. a. $5x-7 < 23$
b. $3x-6 > 36$
c. $7x+99 \leq -6$
d. $3y-77 < -44$
e. $5x+7 > 77$
22. a. $3(x+8) + 7(x-30) \leq -113$
b. $5(x-3) + 9(x-6) > 85$
c. $2(x+7) - 3(x-5) < 26$
e. $6(x+7) + 7(x+2) > 43$
f. $-2(2x-5) - 2(-x-2) < -2$

Ca. Alg. 1 (4), (5)

23. Given the following steps in solving an equation, which property could be used to justify each statement?
- a. $3(x-5) = 17$ _____
b. $3x-15 = 17$ _____
c. $3x = 32$ _____
d. $x = 32/3$ _____

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24. Given the following steps in solving an equation, which property could be used to justify each statement?

e. $-7(x-5) = 33$ _____

f. $-7x+35 = 33$ _____

g. $-7x = -2$ _____

h. $x = 2/7$ _____

Ca. Alg. 1 (5)

25. a. Which is the first incorrect step in the solution?

I. $\frac{1}{3}[3(x-6)-(5-x)] \leq 36$

II. $3x-18-5+x \leq 36$

III. $4x-23 \leq 36$

IV. $4x \leq 13$

V. $x \leq \frac{13}{4}$

- b. Which is the first incorrect step in the solution?

I. $\frac{2}{3}[-2(5x-3)+2(3x-5)] > 17$

II. $\frac{2}{3}[-10x+6+6x-10] > 17$

III. $\frac{2}{3}[-4x-4] > 17$

IV. $-\frac{8}{3}x - \frac{8}{3} > 17$

V. $-\frac{8}{3}x > \frac{43}{3}$

VI. $-8x > 43$

VII. $x > \frac{43}{8}$

Ca. Alg. 1 (5)

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26. a. Renting a truck is \$40 a day plus \$0.30 a mile. If you rent the truck for four days, it costs you \$205. Write an equation to find out how many miles were driven.
- b. An industrial saw costs \$75 a day to rent plus \$1.50 an hour. If the saw is rented for two days, the cost is \$180. Write an equation to find out how many hours the saw was rented for.
- c. A car was towed to two different locations in the city. The cost to tow the car is \$80 to hook up the car plus \$.40 a mile. If the total cost of the tow is \$186, write an equation to determine how many miles the car was towed.
- d. The cost to rent a fork lift is \$25 a day plus \$.75 an hour for usage fees. If the fork lift was rented for 5 days and cost \$165, write an equation to determine the number of hours the fork lift was used.

Ca. Alg. 1 (5)

27. a. Scores on the first three exams were 70,80, and 82. What score is needed on the next exam to average 75?
- b. The average number of flowers on a float for the Rose Parade needs to be at least 85 flowers per square foot. Three measurements are taken, the first two measurements are 92 and 80. Write an equation to find the smallest number of flowers needed on the third float.
- c. A person must average 30 hours a week to maintain their benefits. The average is taken over 5 weeks and you work 18, 28, 25, and 41 hours. Write an equation to determine the least number of hours you must work to maintain your benefits.
- d. A car company wants to average 50 miles per gallon for their fleet of four cars. If the first three cars get 45, 60, and 35 miles per gallon, write an equation to determine what the lowest number of miles per gallon that the fourth car must get to maintain the average.

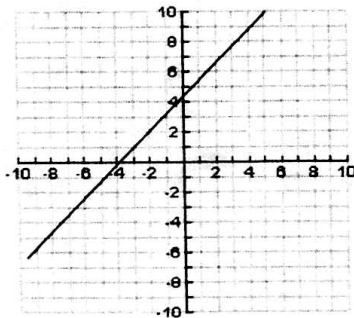
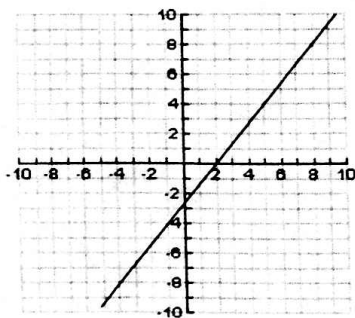
Ca. Alg. 1 (5)

28. Graph the following equations:
- a. $-3x+4y=7$
 - b. $x-3y=2$
 - c. $-5x+6y=12$
 - d. $7x+6y=24$
 - e. $-x-y-3=0$

Ca. Alg. 1 (6)

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29. Given the graph below, what is the x- intercept of the line?



Ca. Alg. 1 (6)

30. Given the equation below, what is the y – intercept of the line?

- a. $2x + 3y = 6$
- b. $x - 2y = 4$
- c. $3x - y = 9$
- d. $7x - 2y = 14$
- e. $2x + 5y = 10$

Ca. Alg. 1 (6)

31. Graph the inequality below:

- a. $y \geq 2x - 3$
- b. $y \geq \frac{3}{2}x - 2$
- c. $y \leq -2x + \frac{1}{2}$
- d. $y \leq 3x - 1$
- e. $y \geq x - 4$

Ca. Alg. 1 (6)

32. Determine if a point lies on the line $y = 2x + 3$ or not.

- a. (1, 5)
- b. (-2, 1)
- c. (0, 3)
- d. (3, 5)
- e. (-5, -7)

Ca. Alg. 1 (7)

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33. Find the equation of a line in slope-intercept form given a slope and a point.

- a. $m = 2, (1, 3)$
- b. $m = 3, (2, -1)$
- c. $m = 3, (-1, 5)$
- d. $m = 4, (2, 3)$
- e. $m = \frac{1}{2}, (-2, 0)$

Ca. Alg. 1 (7)

34. Find the equation of the line in standard form given two points:

- a. $(2, 3), (-1, 2)$
- b. $(5, 2), (-1, -2)$
- c. $(3, 1), (2, 5)$
- d. $(1, 0), (3, 4)$
- e. $(-5, 2), (2, 1)$

Ca. Alg. 1 (7)

35. Give the equation of:

- a. Standard form of a line
- b. Point-slope formula
- c. Finding the slope given two points
- d. Slope-intercept form of a line

Ca. Alg. 1 (7)

36. Tell whether the statement about parallel lines is true or false.

- a. Slopes are opposites and reciprocals.
- b. Same slopes but different y intercepts.
- c. Opposite slopes but same y intercepts.
- d. Opposite slopes and different y intercepts.

Ca. Alg. 1 (8)

37. Determine if the lines parallel, perpendicular or neither?

a. $x - y = -4$
 $y = -3 + x$

b. $y = 4 + x$
 $x + y = 6$

c. $x + y = 5$
 $x - y = 3$

Ca. Alg. 1 (8)

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38. a. Find the equation of the line perpendicular to the line represented by $y = 3x + 1$ and passing through $(1, 5)$.
- b. Find the equation of the line perpendicular to the line represented by $y = 2x - 5$ and passing through $(2, -1)$.
- c. Find the equation of the line perpendicular to the line represented by $y = x - 6$ and passing through $(2, 1)$.

Ca. Alg. 1 (8)

39. Which of the lines shown are parallel?

- a. $2y = 3x - 2$
b. $2x + 6y = 3$
c. $y = \frac{3}{2}x - 5$

Ca. Alg. 1 (8)

40. Tell whether the statement about the slopes of perpendicular lines is true or false.

- a. Slopes of perpendicular lines are the same.
b. Slopes of perpendicular lines are opposite signs and reciprocals.
c. Slopes of perpendicular lines are opposites but not reciprocals.

Ca. Alg. 1 (9)

41. Solve the system of equations:

a. $r = -3s$
 $r = 10 - 4s$

b. $y = 2x - 5$
 $y = 7x$

c. $x = 4y$
 $x = 2y - 8$

d. $y = 2x$
 $y = x - 6$

e. $x + y = 10$
 $y = x + 8$

Ca. Alg. 1 (9)

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42. a. You have 20 coins in quarters and dimes. Their value is \$ 3.05. Find the number of each kind of coin.
- b. A jar of dimes and quarters contains \$15.25. There are 103 coins in all? How many of each kind are there?
- c. You have 13 coins in quarters and nickels. They total \$1.25. How many of each kind are there?

Ca. Alg. 1 (9)

43. Solve the following system for x:

a. $x - y = 7$
 $x + y = 3$

b. $4a + 3b = 7$
 $-4a + b = 5$

c. $7c + 5d = 18$
 $c - 5d = -2$

d. $8x - 5y = -9$
 $3x + 5y = -2$

e. $2x - y = 4$
 $x + y = 5$

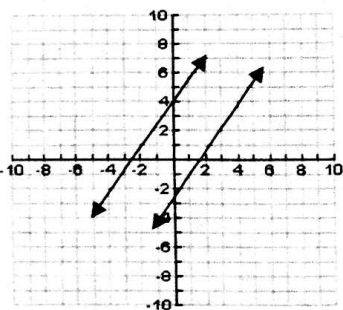
Ca. Alg. 1 (9)

44. a. Where do the lines represented by $y = -x + 5$ and $y = x - 1$ intersect?
- b. Where do the lines represented by $y = -x + 10$ and $y = x - 8$ intersect?
- c. Where do the lines represented by $3x - y = 9$ and $2x + y = 6$ intersect?

Ca. Alg. 1 (9)

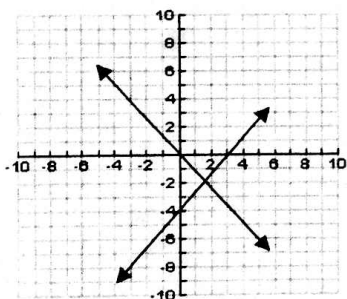
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45.



A system of equations is graphed above. Tell whether the statement below about the graph is true or false.

- a. The system has one unique solution.
- b. The system has no solution.
- c. The system has infinitely many solutions.
- d. The slopes are the same.



The system of equations is graphed above. Tell whether the statement below about the graph is true or false.

- e. The system has one unique solution
- f. The system has no solution.
- g. The system has the same slopes.
- h. The system has many solutions.

Ca. Alg. 1 (9)

46. Use the preceding table and predict what the price will be in 2006.

Year	1999	2000	2001	2002
Price	\$9	\$10	\$11	\$12

Ca. Alg. 1 (16)

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47. Graph the system of inequalities:

a. $y \geq -2x + 2$
 $y \geq x + 4$

b. $y \geq -x - 4$
 $y \geq 2x + 3$

c. $y \leq 3x - 5$
 $y \leq -x + 2$

Ca. Alg. 1 (9)

48. Tell whether the relation shown in the table is a function or not:

X	Y
-3	5
2	-1
5	0
7	1

Ca. Alg. 1 (16)

49. a. Find the $f(-3)$ if $f(x) = \frac{1}{x}$
b. Find the $f(2)$ if $f(x) = x - 2$
c. Find the $f(5)$ if $f(x) = \frac{1}{x}$
d. Find the $f(0)$ if $f(x) = 2x - 5$
e. Find the $f(-4)$ if $f(x) = x + 3$

Ca. Alg. 1 (18)

50. Give the domain of the preceding relation:

- a. $\{(2, 3), (1, 5), (3, 0), (4, 20)\}$
b. $\{(3, 5), (6, 9), (-2, 3), (1, 4)\}$
c. $\{(7, -1), (3, 1), (0, -1), (2, -4)\}$
d. $\{(2, 6), (7, -2), (3, -5), (8, 1)\}$
e. $\{(5, 2), (3, 9), (4, -4), (8, -3)\}$

Ca. Alg. 1 (17)

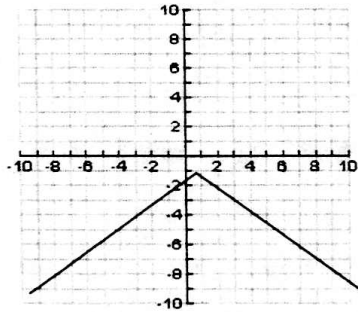
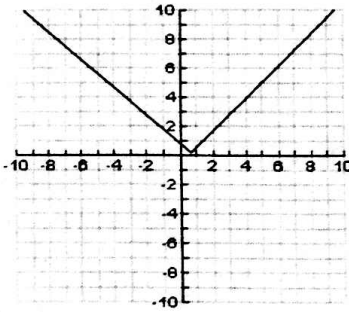
51. What is the range of the functions given the domain $\{1, -1, 2, 3\}$

- a. $f(x) = x - 4$
b. $f(x) = 2x - 3$
c. $f(x) = 3x + 1$
d. $f(x) = x + 3$
e. $f(x) = 2x - 5$

Ca. Alg. 1 (17)

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52. What is the range of the preceding graphs?

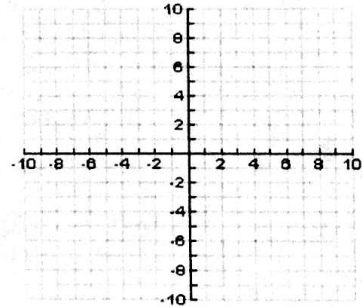
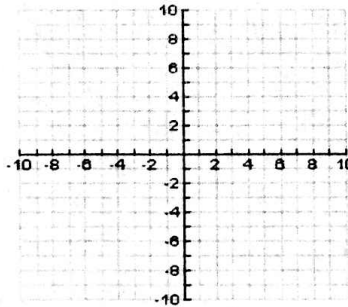
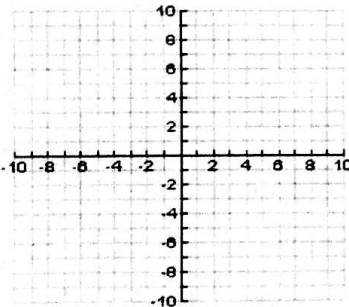


Ca. Alg. 1 (17)

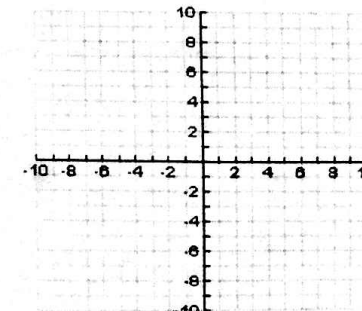
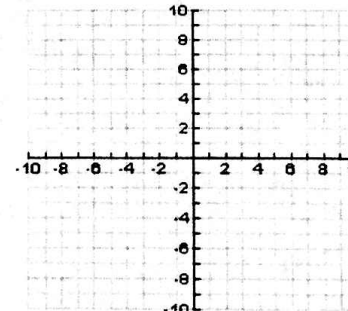
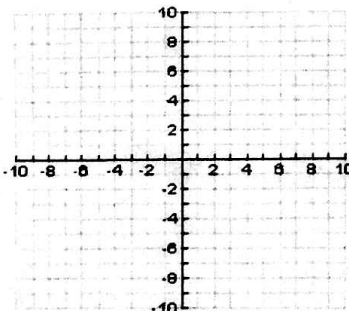
53. Identify which functions are relations:

- a. $\{(2,0), (1,2), (3,4), (5,3)\}$
- b. $\{(5,1), (5,2), (5,0), (5, 4)\}$
- c. $\{(1,6), (3, 2), (2,7), (2,1)\}$
- d. $\{(5,1), (3,1), (2,1), (4,1)\}$

54. a. Give an example of a graph that is a function using vertical line test:



b. Give an example of a graph that is not a function using vertical line test:



Ca. Alg. 1 (18)

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55. What is the sum of:

- a. 3 and the opposite of 3
- b. $-2x$ and the opposite of $-2x$
- c. $\frac{1}{2}$ and the opposite of $\frac{1}{2}$

Ca. Alg. 1 (2)

56. Find the reciprocal of:

- a. -5
- b. $\frac{1}{5}$
- c. $-\frac{1}{2}$
- d. -3
- e. 3

Ca. Alg. 1 (2)

57. Arrange the given polynomial in descending order:

- a. $1 + x^4 - 2x^2 + 3x$
- b. $5 - y + 3y^3 - 2y^2$
- c. $3 - 2b - b^4 - 3b^3$
- d. $X^4 - 3x - 6x^2 - 6$
- e. $3r - r^2 + 2r^4 - 4$

Ca. Alg. 1 (10)

- 58.
- a. $(x^2 - 2x + 5) + (5x^2 + 3x - 7) =$
 - b. $(4x^2 + 5x - 1) + (2x^2 - 3x + 4) =$
 - c. $(3x^2 - x - 4) + (4x^2 - 2x - 3) =$
 - d. $(2x^2 - 3x - 2) + (3x^2 - 5x + 4) =$
 - e. $(x^2 - 4x - 1) + (2x^2 - 6x - 3) =$

Ca. Alg. 1 (10)

- 59.
- a. $(2x^2 - x + 3) - (4x^2 - 3x - 2) =$
 - b. $(3x^2 - 2x + 1) - (x^2 + 5x - 4) =$
 - c. $(5x^2 + 2x - 2) - (3x^2 - x + 5) =$
 - d. $(4x^2 - x - 5) - (2x^2 - 4x - 6) =$
 - e. $(x^2 + 3x - 1) - (3x^2 - x - 4) =$

Ca. Alg. 1 (10)

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60. a. $(x - 5)(3x - 3) =$
b. $(2x - 6)(x + 5) =$
c. $(3x - 1)(4x - 2) =$
d. $(x + 4)(6x - 3) =$
e. $(3x + 2)(x + 2) =$

Ca. Alg. I (10)

61. a. $\frac{25x^3}{5x^2} =$
b. $\frac{15x^5}{3x^2} =$
c. $\frac{8y^4}{7y^2} =$
d. $\frac{20a^5}{2a} =$
e. $\frac{63b^7}{9b^4} =$

Ca. Alg. I (10)