ALGEBRA I REVIEW

1. Solve:

a. $5(y-2)-2y=65$
b. $2y+4(1-y)\le 3(2-y)$
c. $3(x-5)=2(x+1)+x$
d. $-2y\le 22+6y$
e. $6\le x+4\le 11$
f. $|x-6|=3$

2. Simplify:

a. $-\frac{2}{3}(6x-9)+\frac{1}{2}(8x-4)$
b. $2(3x+6)-3(x+12)$
c. $7m+5(3-m)-19$

3. Name the property being illustrated in each of the following equations:

a. $x(yz)=(xy)z$
b. $3(2-5)=3\cdot 2-3\cdot 5$
c. $(y+2)+3=y+(2+3)$
d. $2(3x)=(3x)2$
e. $1\cdot x=x$

4. Simplify:

a. $(-4m^2n^3p)^2$
b. $(-3xy^2)\cdot(4xy)$
c. $\frac{32a^3b^2c}{8abc^0}$
d. $\frac{x^2y^{-3}}{x^{-5}y}$

5. Simplify:

a. $\frac{7-x}{x^2-7x}\cdot\frac{16x^2-4x}{4x^2+3x-1}$

b. $\frac{5f-2}{3}-\frac{3f+1}{5}+\frac{2f-5}{15}$

c. $\frac{\frac{x}{6}}{\frac{x}{3}-\frac{1}{2}}$

6. Divide using long division:

$(10a^3-3a^2-6a-4)\div(a+1)$

7. Multiply:

a. $(5y-2)(3y-1)$
b. $(3x-1)(x^3-3x^2+2)$
c. $(2x+3)^2$

8. Solve by factoring:

a. $x^2-14x+48=0$
b. $x^2+x=12$
c. $2x^2-5x-3=0$
d. $25x^2-36=0$

9. Solve using the quadratic formula:

a. $3x+4=2x^2$

b. $x^2-8x+3=0$

10. Simplify completely:

a. $\sqrt{2}(\sqrt{10}+\sqrt{6})$

b. $\frac{6}{\sqrt{3}}$

c. $\sqrt{45x^{11}y^6}$

d. $\sqrt{108}+\sqrt{12}$

11. Solve for x:

a. $\frac{x-3}{x+1}-\frac{2}{x}=\frac{4}{x^2+x}$

b. $\sqrt{5x}-2=1$

c. $\frac{x-5}{6}=\frac{3}{x-8}$

12. Use the distributive property:

a. $3ac(3+3a+c)$
b. $4xyz+4xy^2$
c. $25x^3y^4z^3+15x^4y^2z^3$
d. $(x+6)(x+9)$

13. FIND THE EQUATION OF THE LINE GIVEN THE FOLLOWING INFORMATION:

a) through (5, –6) and (2, 3)

b) through (5, –3) and perpendicular to $y = \frac{1}{4}x - 5$

} Use point-slope form only.

c) having the same y-intercept as $2x - y = 4$ and parallel to $x + y = 6$

d) through (6, –7) and (1, –7)

e) vertical and through (–5, –8)

14. SOLVE THIS SYSTEM BY SUBSTITUTION:

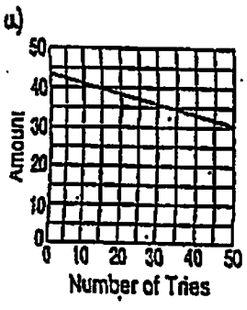
$$x - 2y = 5$$
$$4x + 3y = 9$$

15. SOLVE THIS SYSTEM BY THE ADDITION METHOD:

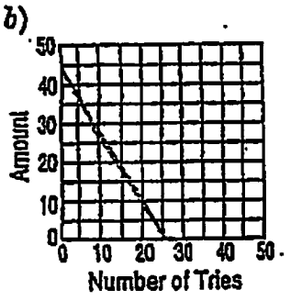
$$3x - 2y = -2$$
$$x + 3y = 14$$

16. Sandra starts out with $43 and feeds quarters into a slot machine. Which graph shows the amount of money left after x tries, assuming that she never wins?

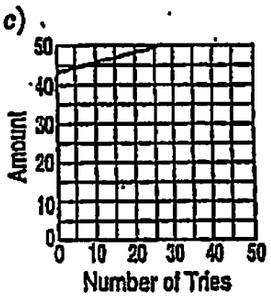
a)



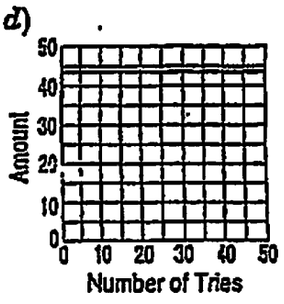
b)



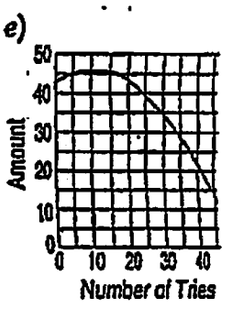
c)



d)



e)



Algebra I Review Answer Key

1. a) $y = 25$
   b) $y \leq 2$
   c) no solution
   d) $y \geq -\frac{11}{4}$
   e) $2 \leq x \leq 7$
   f) $x = 9, 3$

2. a) 4
   b) $3x - 24$
   c) $2m - 4$

3. a) assoc. prop. of mult.
   b) distributive prop.
   c) assoc. prop. of add.
   d) comm. prop. of mult.
   e) identity of mult.

4. a) $16m^4n^6p^2$
   b) $-12x^2y^3$
   c) $4a^2bc$
   d) $\frac{x^7}{y^4}$

5. a) $\frac{(7-x)}{x(x-7)} \cdot \frac{4x(4x-1)}{(4x-1)(x+1)}$
   $= \frac{-4}{x+1}$
   b) $\frac{25f-10-9f-3+2f-5}{15}$
   $= \frac{18(f-1)}{15} = \frac{6(f-1)}{5}$
   c) $\frac{\frac{x}{6}}{\frac{x}{9}-\frac{1}{2}} \cdot \frac{6}{6} = \frac{x}{2x-3}$

6. $10a^2 - 13a + 7$ R: -11

7. a) $15y^2 - 11y + 2$
   b) $3x^4 - 10x^3 + 3x^2 + 6x - 2$
   c) $4x^2 + 12x + 9$

8. a) $6, 8$
   b) $3, -4$
   c) $-\frac{1}{2}, 3$
   d) $\pm\frac{6}{5}$

9. a) $x = \frac{3 \pm \sqrt{41}}{4}$
   b) $x = 4 \pm \sqrt{13}$

10. a) $2\sqrt{5} + 2\sqrt{3}$
    b) $2\sqrt{3}$
    c) $3x^5y^3\sqrt{5x}$
    d) $6\sqrt{3} + 2\sqrt{3} = 8\sqrt{3}$

11. a) mult. each side by $x(x+1)$ → $x = 6, -1$
    $\therefore x = 6 \quad (x \neq -1)$
    b) $\sqrt{5x} = 3$, sq. each side
    $x = \frac{9}{5}$
    c) cross-mult., factor
    $x = 11, 2$

12. a) $9ac + 9a^2c + 3ac^2$
    b) $4xy(3 + y)$
    c) $5x^3y^2z^3(5y^2 + 3x^2)$
    d) $x^2 + 15x + 54$

13. a) $y + 6 = -3(x - 5)$
    b) $y + 3 = -4(x - 5)$
    c) $y = -x - 4$
    d) $y = -7$
    e) $x = -5$

14. $(3, -1)$

15. $(2, 4)$

16. a