

Ch. 3 Test STUDY GUIDE

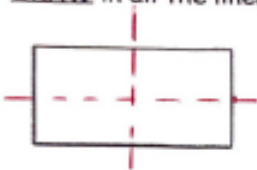
Show all your work

Name

Ann Sirkky

Hr

1. Does each shape have symmetry? CIRCLE Yes or No for each type. If it has Reflection Symmetry, DRAW in all the line(s) of symmetry. If it has Rotation Symmetry, write how many degrees.



Rectangle

Reflection? Yes or No

Rotation? Yes or No

Degrees? 180°



Isosceles Trapezoid

Reflection? Yes or No

Rotation? Yes or No

Degrees? —

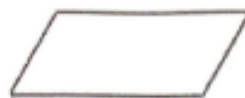


Isosceles Right Triangle

Reflection? Yes or No

Rotation? Yes or No

Degrees? —



Parallelogram

Reflection? Yes or No

Rotation? Yes or No

Degrees? 180°

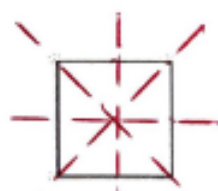


Equilateral Triangle

Reflection? Yes or No

Rotation? Yes or No

Degrees? $120^\circ, 240^\circ$

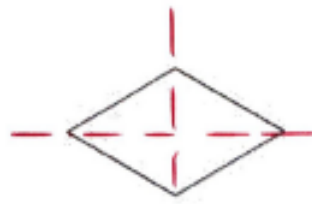


Square

Reflection? Yes or No

Rotation? Yes or No

Degrees? $90^\circ, 180^\circ, 270^\circ$

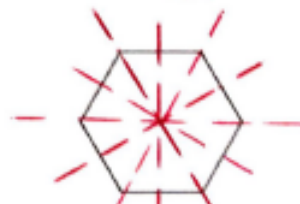


Rhombus

Reflection? Yes or No

Rotation? Yes or No

Degrees? 180°



Regular Hexagon

Reflection? Yes or No

Rotation? Yes or No

Degrees? $60^\circ, 120^\circ, 180^\circ, 240^\circ, 300^\circ$

2. a. What is the equation of the line parallel to $y = -2x + 7$ that passes through $(-1, -8)$?

$$\begin{aligned} y &= -2x + b \\ -8 &= -2(-1) + b \\ -8 &= 2 + b \end{aligned} \rightarrow -10 = b$$

$$y = -2x - 10$$

b. What is the equation of the line that is perpendicular to the y-axis passing through $(9, 2)$?

$$y = 2 \quad \text{Hay}$$

c. What is the equation of the line perpendicular to $y = -4x + 12$ that passes through $(-8, -4)$?

$$\begin{aligned} y &= \frac{1}{4}x + b \\ -4 &= \frac{1}{4}(-8) + b \\ -4 &= -2 + b \end{aligned} \rightarrow -2 = b$$

$$y = \frac{1}{4}x - 2$$

d. What is the equation of the line passing through the points $(12, -7)$ and $(-3, -2)$?

$$\frac{-2 - (-7)}{-3 - 12} = \frac{5}{-15} = -\frac{1}{3}$$

$$\begin{aligned} y &= -\frac{1}{3}x + b \\ -2 &= -\frac{1}{3}(-3) + b \\ -2 &= 1 + b \end{aligned} \rightarrow b = -3$$

$$y = -\frac{1}{3}x - 3$$

3. Rewrite each of these products as a sum.

a. $2x(x - 9y + 3xy - 14)$

$$2x^2 - 18xy + 6x^2y - 28x$$

b. $(x - 7)(9 + y)$

$$9x + xy - 63 - 7y$$

c. $3x^2(6x - y + 14)$

$$18x^3 - 3x^2y + 42x^2$$

d. $(x - 3)(x + 8)$

$$x^2 + 8x - 3x - 24$$

$$x^2 + 5x - 24$$

e. $(x - 4)(4 - x)$

$$4x - x^2 - 16 + 4x$$

$$-x^2 + 8x - 16$$

f. $5(x - 2)(x - 6)$

$$5(x^2 - 6x - 2x + 12)$$

$$5(x^2 - 8x + 12)$$

$$5x^2 - 40x + 60$$

g. $-\frac{1}{2}(x - 8)(x - 8)$

$$-\frac{1}{2}(x^2 - 8x - 8x + 64)$$

$$-\frac{1}{2}(x^2 - 16x + 64)$$

$$-\frac{1}{2}x^2 + 8x - 32$$

h. $(x - 5y)(6x - xy + 14y)$

$$6x^2 - x^2y + 14xy - 30xy + 5xy^2$$

$$6x^2 - x^2y - 16xy + 5xy^2 - 7ay^2$$

4. Use Fraction Busters to solve for x:

a. $\frac{5}{8}x - \frac{1}{6} = \frac{5}{3}$

$$15x - 4 = 40$$

$$15x = 44$$

$$x = \frac{44}{15}$$

b. $-\frac{2}{3}x - 3 + \frac{4}{5}x = \frac{1}{2}$

$$-20x - 90 + 24x = 15$$

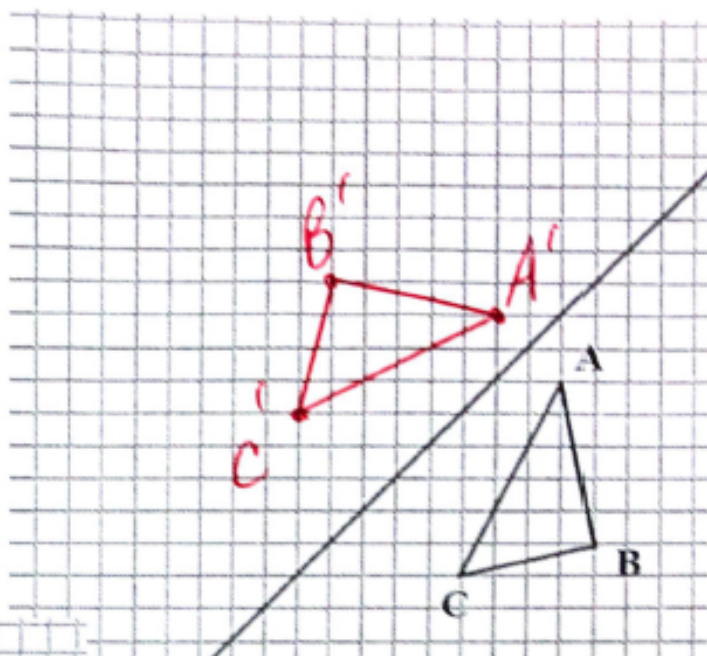
$$4x - 90 = 15$$

$$4x = 105$$

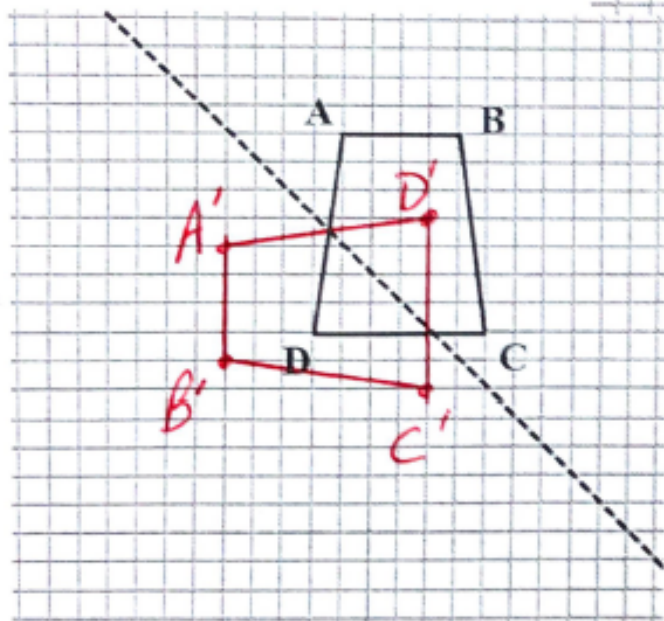
$$x = \frac{105}{4}$$

5. Reflect the shape across the line.
Label the image appropriately.

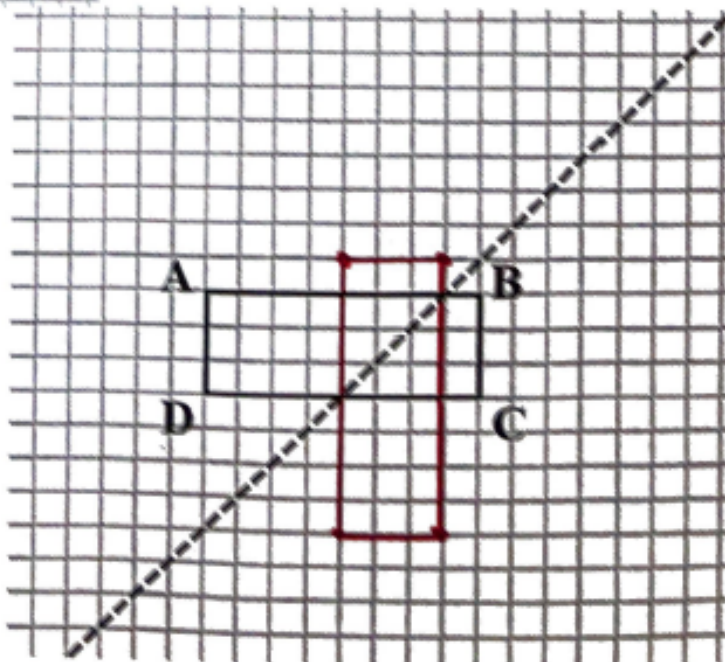
a.



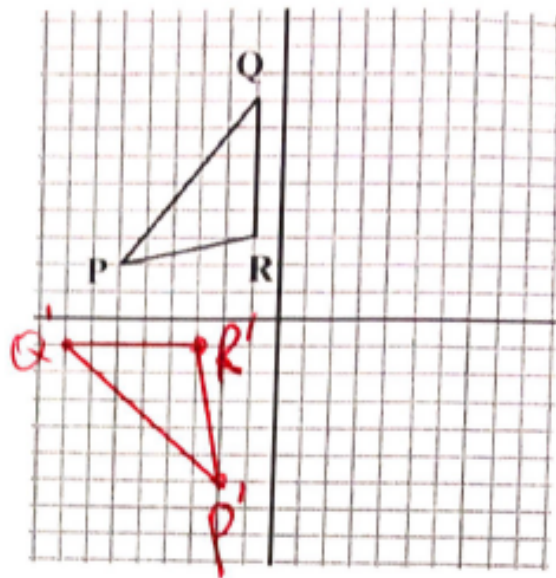
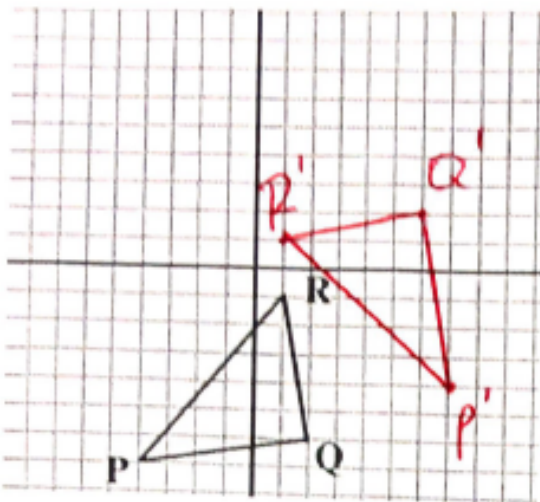
b.



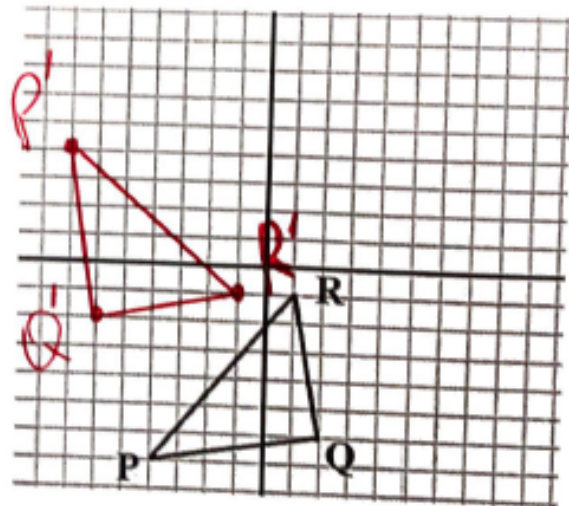
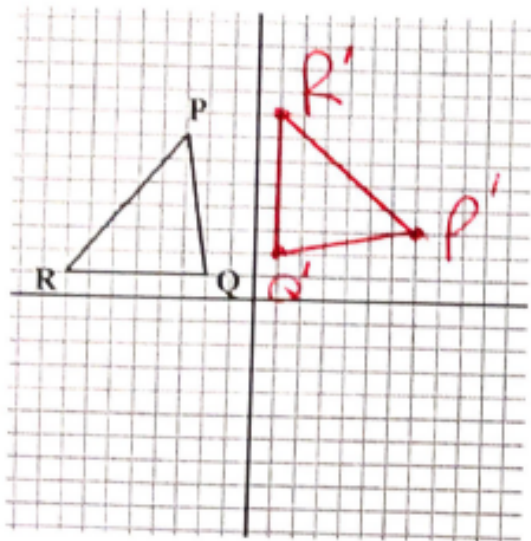
c.



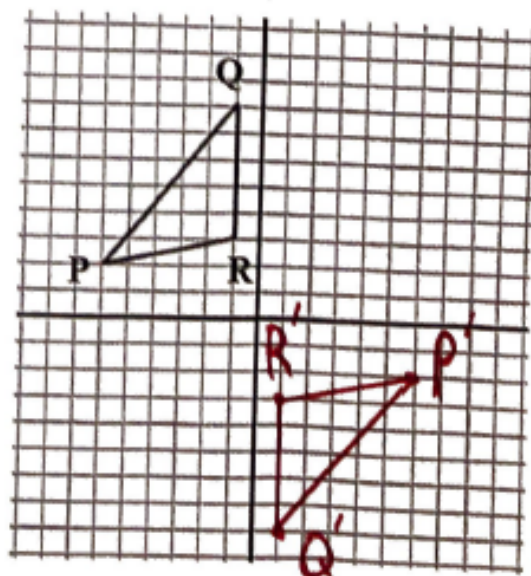
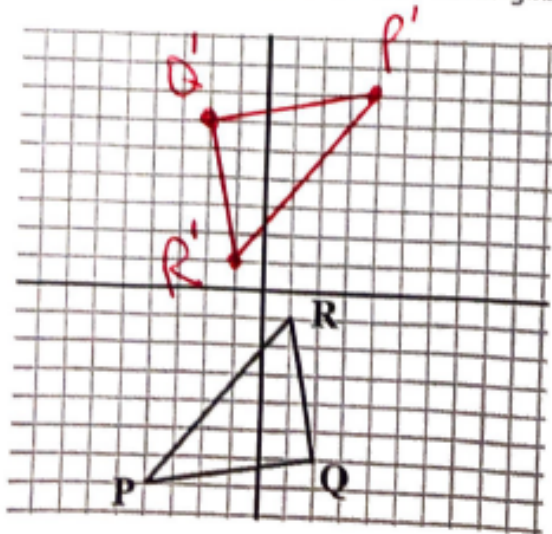
6a. Rotate $\triangle PQR$ 90° counterclockwise ($\odot$) about the origin. Label the image appropriately.



b. Rotate $\triangle PQR$ 90° clockwise ($\odot$) about the origin. Label the image appropriately.



c. Rotate $\triangle PQR$ 180° clockwise ($\odot$) about the origin. Label the image appropriately.



7. Solve for x. Show all steps.

a) $8^{(x+8)} = 8^{7x}$

$$\begin{aligned} x+8 &= 7x \\ -x & \quad -x \\ \hline 8 &= 6x \\ \frac{8}{6} &= \frac{6x}{6} \end{aligned} \quad \rightarrow \quad x = \frac{4}{3}$$

c) $3^{(2x+4)} = 27^{(2x-1)}$

$$3^{2x+4} = (3^3)^{2x-1}$$

$$\begin{aligned} 2x+4 &= 6x-3 \\ 7 &= 4x \\ \rightarrow x &= \frac{7}{4} \end{aligned}$$

e) $9^{(2x-3)} = 27^{4x}$

$$(3^2)^{2x-3} = (3^3)^{4x}$$

$$\begin{aligned} 4x-6 &= 12x \\ -6 &= 8x \end{aligned}$$

$$x = -\frac{3}{4}$$

8. Simplify:

a) $\frac{m^{-6}}{3m^2k^{-4}}$

$$\frac{k^4}{3m^8}$$

b) $(-2a^4)^{-5}$

$$\frac{1}{(-2a^4)^5} = \frac{1}{-32a^{20}}$$

$$\frac{-1}{32a^{20}} \quad \leftarrow \text{put the neg on top}$$

f) $2(4a^{-4})^{-3}$

$$\frac{2}{(4a^{-4})^3} = \frac{2}{64a^{-12}}$$

$$\frac{a^{12}}{32}$$

e) $\frac{-4m^{16}k}{-12m^7k^4}$

$$\frac{m^9}{3k^3}$$

b) $25^6 = 5^{18x}$

$$(5^2)^6 = 5^{18x}$$

$$\frac{12}{18} = \frac{18x}{18}$$

$$x = \frac{2}{3}$$

d) $32^{2x} = 2^{(5x-15)}$

$$(2^5)^{2x} = 2^{5x-15}$$

$$10x = 5x - 15$$

$$5x = -15$$

$$x = -3$$

f) $125^{(2x+1)} = 25^{(4x-3)}$

$$(5^3)^{2x+1} = (5^2)^{4x-3}$$

$$6x+3 = 8x-6$$

$$9 = 2x$$

$$\frac{9}{2} = x$$

c) $-4a^6m^{-3}(2am^7)$

$$-8a^7m^4$$

g) $38am \left(\frac{6am^4}{9m} \right)^{-2}$

$$\frac{38am \cdot 9}{4a^2m^6}$$

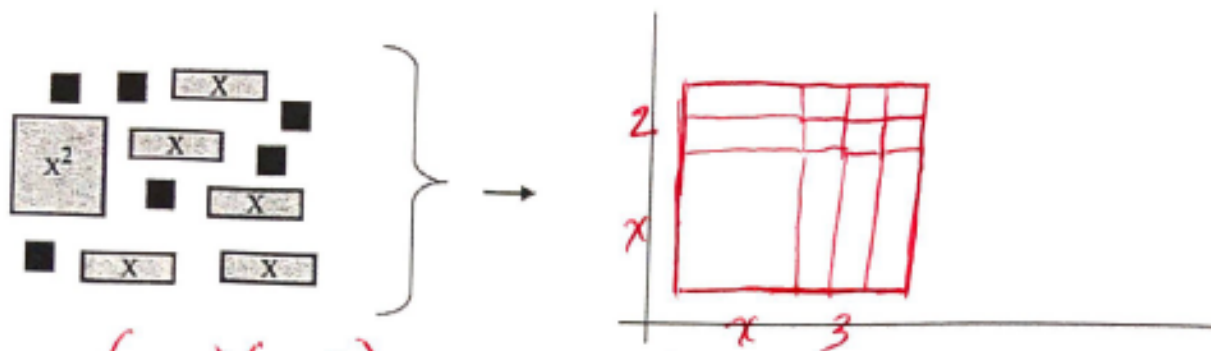
$$\left(\frac{2am^3}{3} \right)^{-2}$$

$$\left(\frac{3}{2am^3} \right)^2$$

$$\frac{19 \cdot 9}{2am^5} = \frac{171}{2am^5}$$

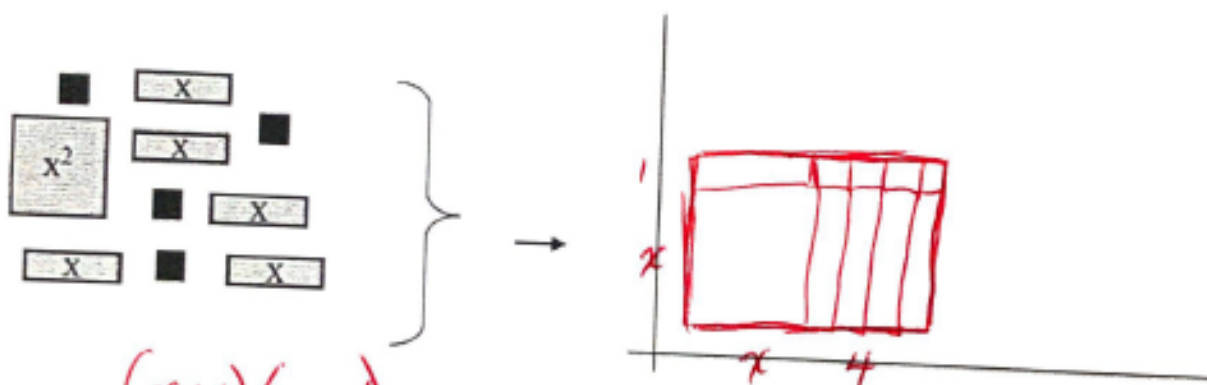
9. Arrange each into one large rectangle. Then write the product, sum and Equivalency Statement.

a.

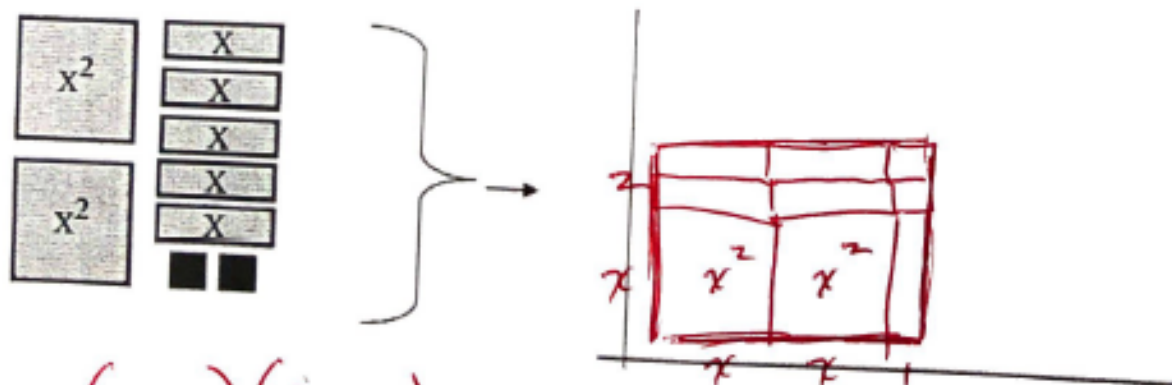


Product $(x+2)(x+3)$ Sum $x^2 + 5x + 6$
 Equivalency Statement $(x+2)(x+3) = x^2 + 5x + 6$

b.



Product $(x+1)(x+4)$ Sum $x^2 + 5x + 4$
 Equivalency Statement $(x+1)(x+4) = x^2 + 5x + 4$



Product $(x+2)(2x+1)$ Sum $2x^2 + 5x + 2$
 Equivalency Statement $(x+2)(2x+1) = 2x^2 + 5x + 2$

Write the domain and range of each:

a) $y = |x - 4|$

domain: $x = \text{any } \#$

range: $y \geq 0$

b) $y = -\sqrt{x + 8}$

domain: $x \geq -8$

range: $y \leq 0$

c) $y = -|x + 3|$

domain: $x = \text{all } \#s$

range: $y \leq 0$

d) $y = 2\sqrt{x - 5}$

domain: $x \geq 5$

range: $y \geq 0$

e) $y = -x^2$

domain: $x = \text{all } \#s$

range: $y \leq 0$

f) $y = x^2 + 4$

domain: $x = \text{all } \#s$

range: $y \geq 4$

g) $x = 3$

domain: $x = 3$ (only 3)

range: $y = \text{all } \#s$

h) $y = 6$

domain: $x = \text{all } \#s$

range: $y = 6$
(only 6)

12. Solve the equations using the method listed. Show the correct work.

by "Undoing"

a. $\sqrt{3x-6} = 9$

$$3x-6 = 81$$

$$3x = 87$$

$$x = 29$$

b. $\frac{3x+4}{4} = -8$

$$3x+4 = -32$$

$$3x = -36$$

$$x = -12$$

by "Rewriting"

c. $.9(x-3) + .4x = 1.6 + x + .5$

$$9(x-3) + 4x = 16 + 10x + 5$$

$$9x - 27 + 4x = 21 + 10x$$

$$13x - 27 = 21 + 10x$$

$$3x = 48$$

$$x = 16$$

d. $600x + 1500 = -2700$

$$[6x + 15 = -27 \text{ is ok}]$$

$$2x + 5 = -9$$

$$2x = -14$$

$$x = -7$$

by "Looking Inside"

e. $|4x-3| = 13$

$$4x-3=13 \text{ or } 4x-3=-13$$

$$4x=16 \text{ or } 4x=-10$$

$$x=4 \text{ or } x=-\frac{5}{2}$$

$$x=4 \text{ or } x=-\frac{5}{2}$$

f. $(2x+1)^2 = 16$

$$2x+1=4 \text{ or } 2x+1=-4$$

$$2x=3 \text{ or } 2x=-5$$

$$x=\frac{3}{2} \text{ or } x=-\frac{5}{2}$$