Questions on 3.5 HW?

Apr 8-8:30 AM

Topic: Converting measurement of area, area and perimeter.

While working with areas it sometimes essential to convert between units of measure, for example changing from square yards to square feet and so forth. Convert the areas below to the desired measure. (Hint: area is two dimensional, for example 1 $yd^2 = 9\ ft^2$ because 3 ft along each side of a square yard equals 9 square feet.)

1. $7\ yd^2 = \ ?\ ft^2$

2. $5\ ft^2 = \ ?\ in^2$

$\frac{5ft^2}{1} \cdot \frac{144\ in^2}{1\ ft^2} = 720 in^2$

3. $1\ mile^2 = \ ?\ ft^2$

27,878,400ft²

4. $100\ m^2 = \ ?\ cm^2$

5. $300\ ft^2 = \ ?\ yd^2$

$\frac{300ft^2}{1} \cdot \frac{1yd^2}{9ft^2} = \frac{300yd^2}{9} = 33.\bar{3}yd^2$

6. $96\ in^2 = \ ?\ ft^2$

Set

Topic: Transformations and Parabolas, Symmetry and Parabolas

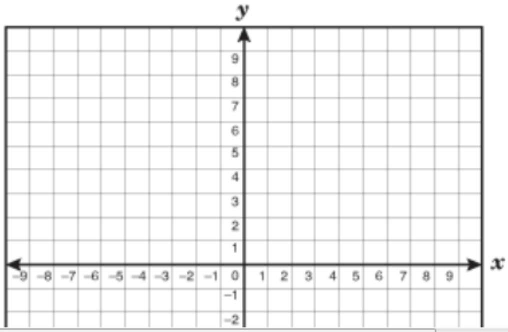
7a. Graph each of the quadratic functions.

$f(x) = x^2$

$g(x) = x^2 - 9$

$h(x) = (x+2)^2 - 9$

b. How do the functions compare to each other?



1yd = 3ft

A = 1yd²
= 9ft²

$\frac{1yd^2}{9ft^2}$ or $\frac{9ft^2}{1yd^2}$

1ft = 12in

A = 1ft²
A = 144in²

1ft = 12in

1ft² = 144in²

$\frac{1ft^2}{144in^2}$ or $\frac{144in^2}{1ft^2}$

1mi = 5280ft

A = 1mi²
A = 27,878,400ft²

1mi = 5280ft

1mi² = 27,878,400ft²

$\frac{1mi^2}{27,878,400ft^2}$ or $\frac{27,878,400ft^2}{1mi^2}$

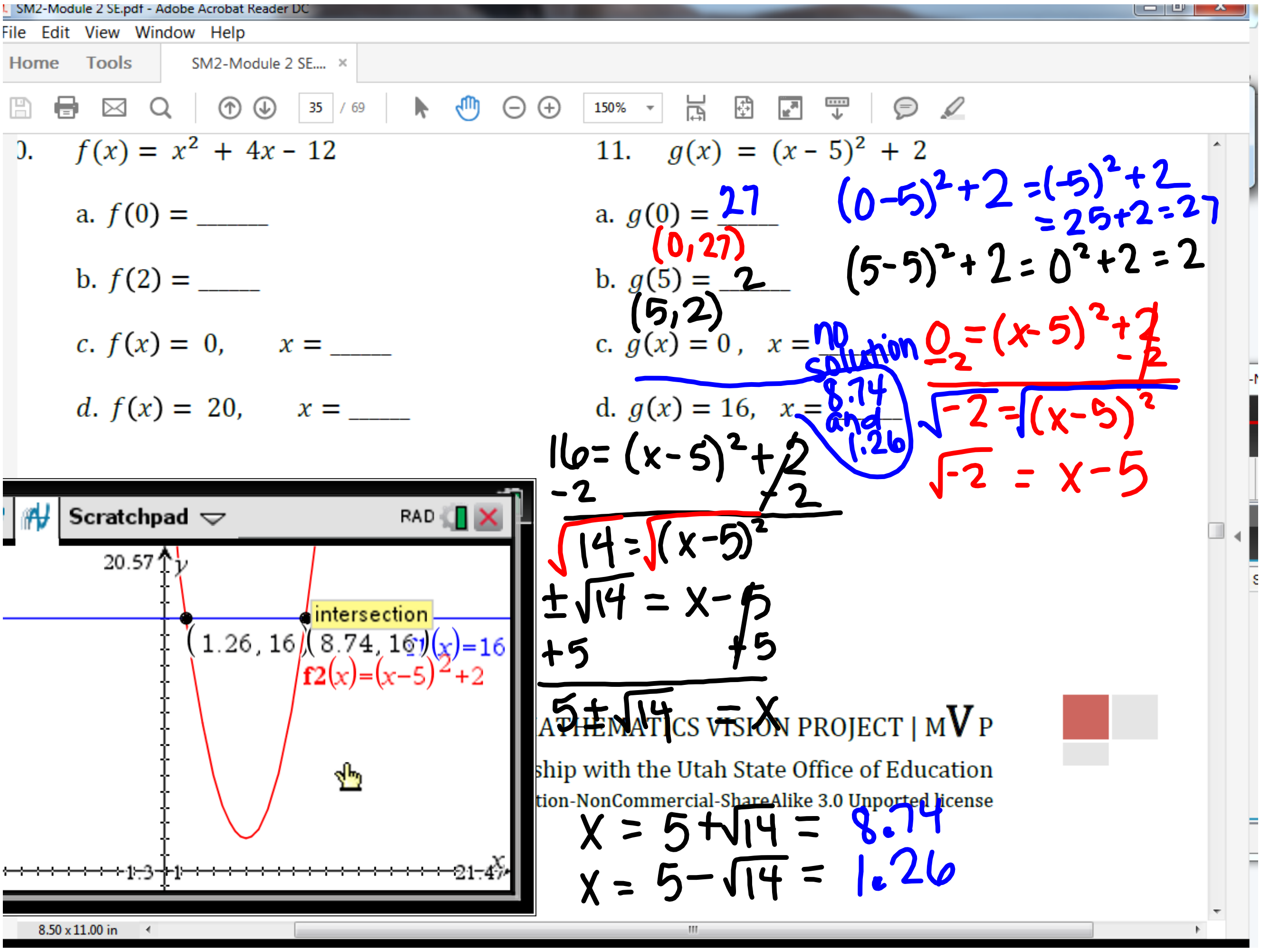
1m = 100cm

A = 1m²
A = 10,000cm²

1m = 100cm

1m² = 10,000cm²

$\frac{1m^2}{10000cm^2}$ or $\frac{10000cm^2}{1m^2}$


SM2-Module 2 SE.pdf - Adobe Acrobat Reader DC

File Edit View Window Help

Home Tools SM2-Module 2 SE....

35 / 69 150%

10. $f(x) = x^2 + 4x - 12$

a. $f(0) =$ ______

b. $f(2) =$ ______

c. $f(x) = 0, \quad x =$ ______

d. $f(x) = 20, \quad x =$ ______

11. $g(x) = (x-5)^2 + 2$

a. $g(0) =$ 27 (0, 27)

$(0-5)^2+2 = (-5)^2+2 = 25+2 = 27$

b. $g(5) =$ 2 (5, 2)

$(5-5)^2+2 = 0^2+2 = 2$

c. $g(0) = 0, \quad x =$ no solution

$0 = (x-5)^2+2$

$-2 \qquad -2$

$\sqrt{-2} = \sqrt{(x-5)^2}$

$\sqrt{-2} = x-5$

d. $g(x) = 16, \quad x =$ 8.74 and 1.26

$16 = (x-5)^2+2$

$-2 \qquad -2$

$\sqrt{14} = \sqrt{(x-5)^2}$

$\pm\sqrt{14} = x-5$

$+5 \qquad +5$

$5 \pm \sqrt{14} = x$

$x = 5+\sqrt{14} = 8.74$

$x = 5-\sqrt{14} = 1.26$

ATHEMATICS VISION PROJECT | MV P

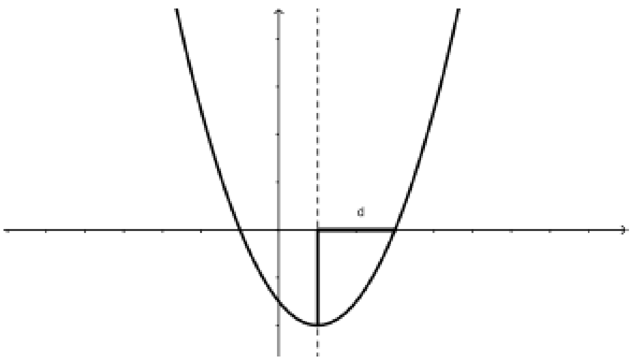
ship with the Utah State Office of Education

tion-NonCommercial-ShareAlike 3.0 Unported license

8.50 x 11.00 in

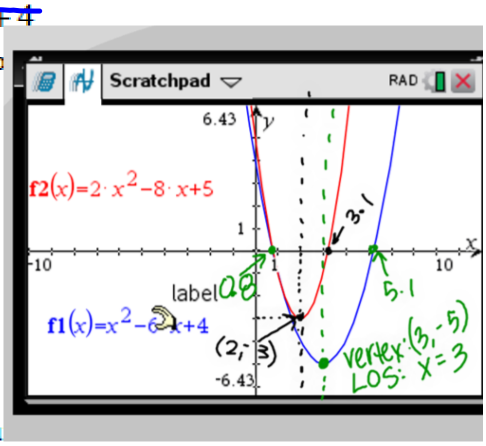
Nov 9-8:13 AM

Just to make it a little easier to talk about some of the features that relate to the intercepts, let's name them with variables. From now on, when we talk about the distance from the line of symmetry to either of the x intercepts, we'll call it *d*. The diagram below shows this feature.



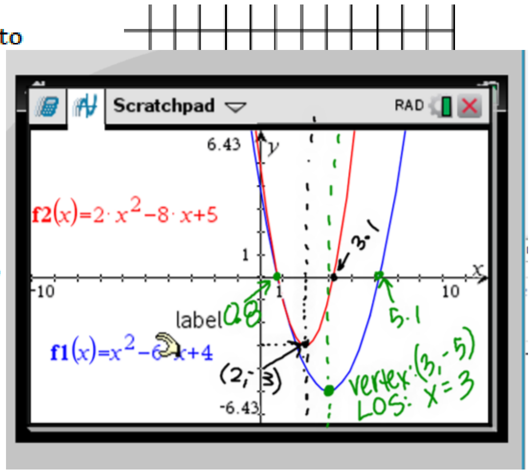
We will always refer to the line of symmetry as the line $x = h$, so the two x-intercepts will be at the points $(h - d, 0)$ and $(h + d, 0)$.

3. So, let's think about another function: $f(x) = x^2 - 6x + 4$
   a. Graph the function by putting the equation intc vertex form.



   b. What is the vertex of the function?
   c. What is the equation of the line of symmetry?
   d. What do you estimate the x-intercepts of the fu to be?
   e. What do you estimate d to be?
   f. What is the value of $f(x)$ at the x-intercepts?
   g. Using the vertex form of the equation and your answer to "f" above, write an equation and solve it to find the exact values of the x intercepts.
   h. What is the exact value of d?
   i. Use a calculator to find approximations for the x-intercepts. How do they compare with your estimates?

4. What about a function with a vertical stretch? Can we find exact values for the x-intercepts the same way? Let's try it with: $f(x) = 2x^2 - 8x + 5$.



   a. Graph the function by putting the equation into vertex form.

   b. What is the vertex of the function?

   c. What is the equation of the line of symmetry?

   d. What do you estimate the x-intercepts of the function to be?

   e. What do you estimate d to be?

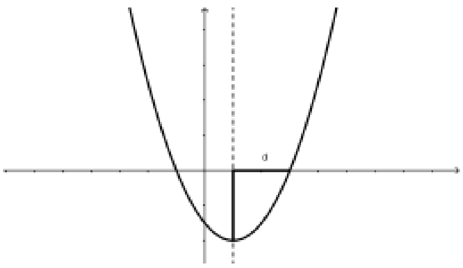
   f. What is the value of $f(x)$ at the x-intercepts?

   g. Using the vertex form of the equation and your answer to "f" above, write an equation and solve it to find the exact values of the x-intercepts.

   h. What is the exact value of d?

   i. Compare your solution to your estimate of the roots. How did you do?

5. Finally, let's try to generalize this process by using: $f(x) = ax^2 + bx + c$ to represent any quadratic function that has x-intercepts. Here's a possible graph of $f(x)$.



   a. Start the process the usual way by putting the equation into vertex form. It's a little tricky, but just do the same thing with a, b, and c as what you did in the last problem with the numbers.

   b. What is the vertex of the parabola?

   c. What is the line of symmetry of the parabola?

   d. Write and solve the equation for the x-intercepts just as you did previously.

6. How could you use the solutions you just found to tell what the x-intercepts are for the function $f(x) = x^2 - 3x - 1$?

$a = 1$
$b = -3$
$c = -1$

$$X = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-3) \pm \sqrt{(-3)^2 + 4 \cdot 1 \cdot -1}}{2 \cdot 1}$$

$$x = \frac{3 \pm \sqrt{9 + 4}}{2} = \frac{3 \pm \sqrt{5}}{2}$$

$$x = \frac{3 + \sqrt{13}}{2}, \frac{3 + \sqrt{13}}{2}$$

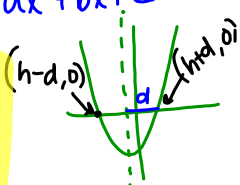
$x = 3.3, -0.3$

PG. 41 #5-21

Axis of Symmetry: $X = \frac{-b}{2a}$

From standard form: $ax^2 + bx + c$

Quadratic Formula:
$$X = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$



$$d = \pm \frac{\sqrt{b^2 - 4ac}}{2a}$$

Nov 3-1:27 PM

Homework

Finish 3.6 "Ready, Set, Go"