**Today we are working on #26-50 on our Secondary Math II - Review (it is SAGE/final review).

Apr 8-8:30 AM

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50. The equation of a circle is given below. Identify the center and radius. Then graph the circle.

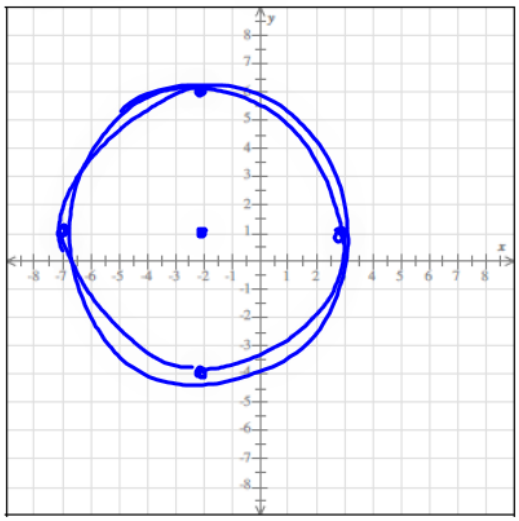
$x^2+y^2+4x-2y-20=0$

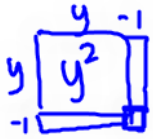
$x^2+4x+4+y^2-2y+1=20+4+1$

$(x+2)^2+(y-1)^2=25$

Center: (-2, 1)

Radius: 5





$x^2+y^2=r^2$

$(x-h)^2+(y-k)^2=r^2$

center: (h,k)

$\sqrt{25}=\sqrt{r^2}$

$5=r$

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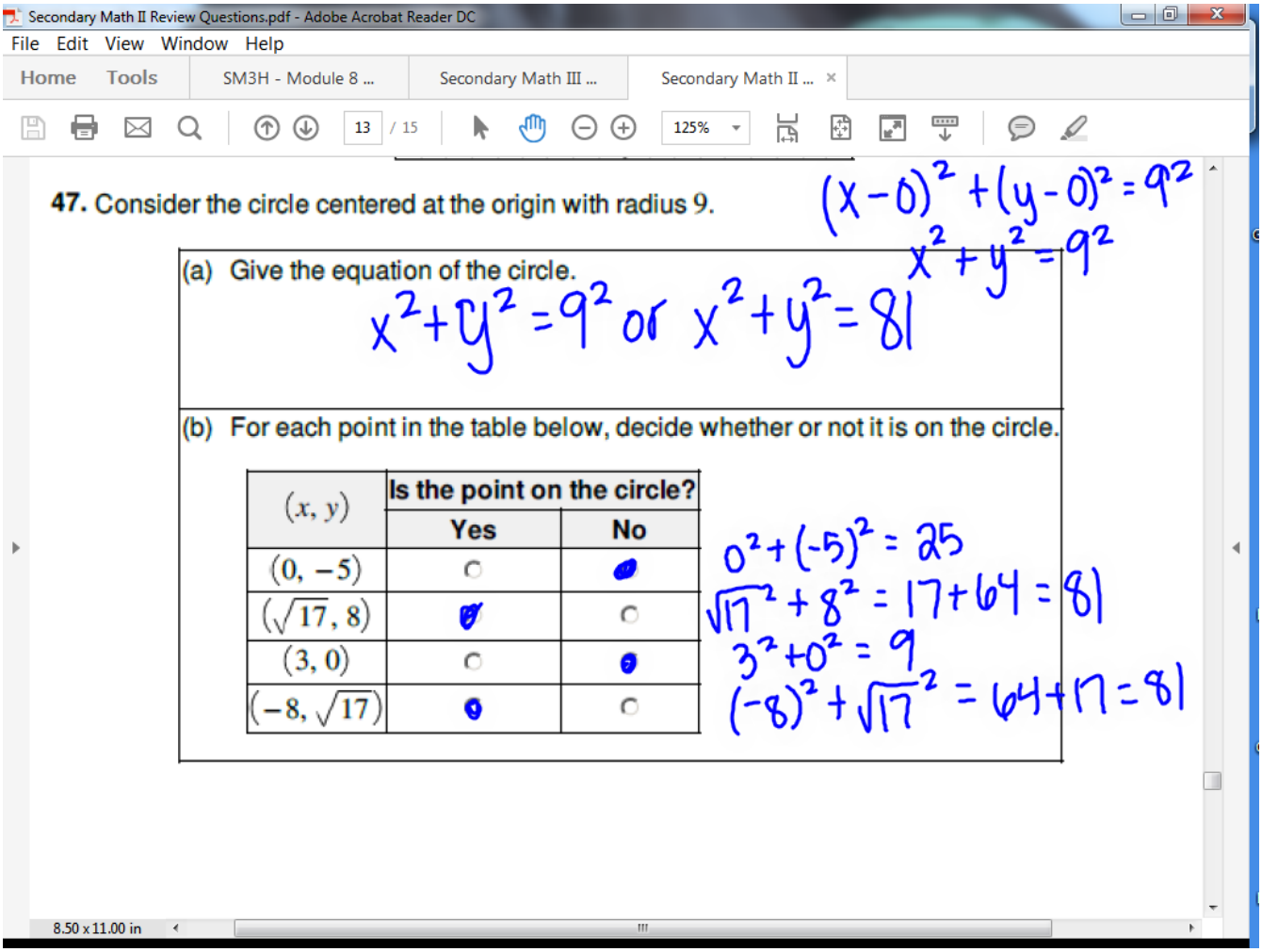
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47. Consider the circle centered at the origin with radius 9.
(x-0)^2+(y-0)^2=9^2
x^2+y^2=9^2
(a) Give the equation of the circle.
x^2+y^2=9^2 or x^2+y^2=81
(b) For each point in the table below, decide whether or not it is on the circle.
(x, y)
Is the point on the circle?
Yes
No
(0, −5)
(√17, 8)
(3, 0)
(−8, √17)
0^2+(-5)^2=25
√17^2+8^2=17+64=81
3^2+0^2=9
(-8)^2+√17^2=64+17=81
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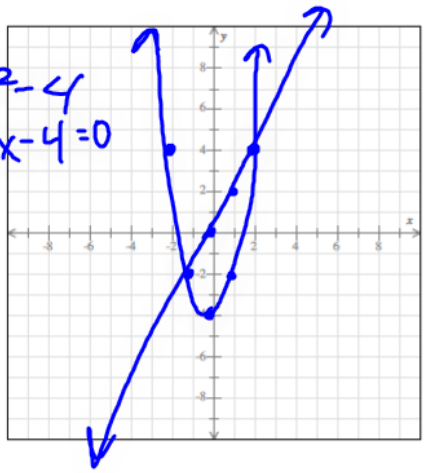
41. Graph the system below. Then write its solution.

$$\begin{cases} y = 2x \\ y = 2x^2 - 4 \end{cases}$$

$2x = 2x^2 - 4$

$2x^2 - 2x - 4 = 0$

$(-1, -2)$ and $(2, 4)$



42. Solve the following system of equations.

$$\begin{cases} y = x^2 + 7x - 5 \\ y = 6x + 7 \end{cases}$$

43. Write the following as an exponential expression.

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42. Solve the following system of equations.

$$\begin{cases} y = x^2 + 7x - 5 \\ y = 6x + 7 \end{cases}$$

$x^2 + 7x - 5 = 6x + 7$

$x^2 + x - 12 = 0$

$(x-3)(x+4) = 0$

$x = 3, -4$

$x = 3$

$y = 6 \cdot 3 + 7$

$y = 25$

$(3, 25)$

$x = -4$

$y = 6(-4) + 7$

$y = 17$

$(-4, 17)$

43. Write the following as an exponential expression.

$\sqrt[5]{t^4}$

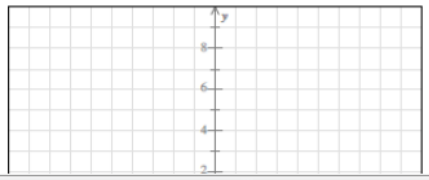
44. Multiply.

$(-3 + 6i)(-4 + 3i)$

Write your answer as a complex number in standard form.

45. Graph the equation.

$y = -5|x|$



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15. In the figure below, the solid circle has center $(5,\ 7)$ and radius 2.
The dashed circle has center $(3,\ 5)$ and radius 1.

Use the transformation tools given to move the solid circle exactly onto the dashed circle.
Then answer the parts below.

(a) left 2, down 2
scale factor: $\frac{1}{2}$

(b) yes, ~

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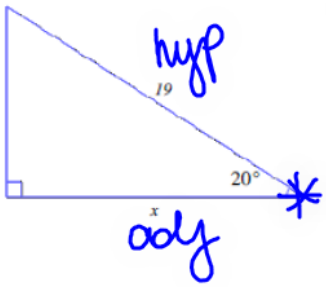
12. Solve for x in the triangle. Round your answer to the nearest tenth.

$19 \cdot \cos 20 = \frac{x}{19} \cdot 19$

$19 \cdot \cos 20 = x$

$17.9 = x$



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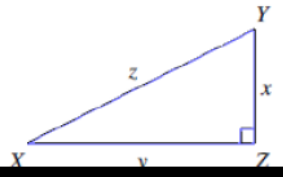
13. A pole that is 3.5 m tall casts a shadow that is 1.32 m long. At the same time, a nearby building casts a shadow that is 35.5 m long. How tall is the building? Round your answer to the nearest meter.

14. The figure below is a right triangle with side lengths x, y, and z.

Suppose that $m\angle X$ does not equal $m\angle Y$.



Part 1: Use x, y, and z to fill in the blanks.
Make sure to use the appropriate upper-case or lower-case letters.

$\sin X = \frac{\square}{\square}$ $\sin Y = \frac{\square}{\square}$

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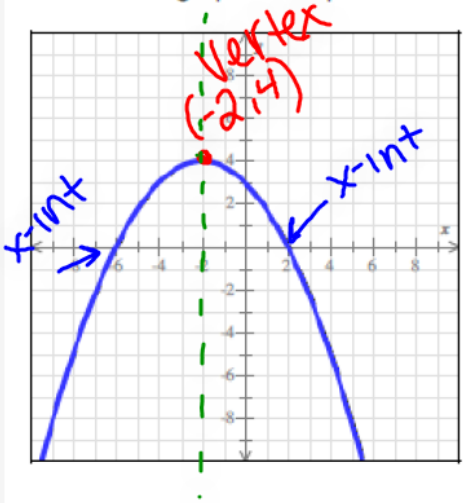
29. Use the graph of the parabola to fill in the table below.



(a)	Does the parabola open upward or downward?
	{ upward downward }
(b)	Find the x-intercept(s).
	x-intercept(s): $-6, 2$
(c)	Find the coordinates of the vertex.
	vertex: $(-2, 4)$
(d)	Find the equation of the axis of symmetry.
	equation of axis of symmetry: $x = -2$

30. The cost C (in dollars) of manufacturing x wheels at Ravi's Bicycle Supply is given by the function $C(x) = 0.5x^2 - 170x + 25{,}850$. What is the minimum cost of manufacturing wheels?

Do not round your answer.

31. The graph of a quadratic function with vertex $(2, -4)$ is shown in the figure below.
Find the domain and the range.

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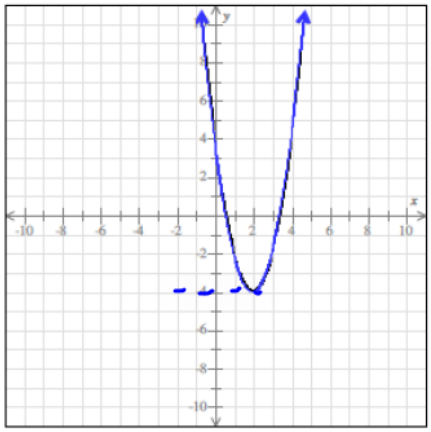
31. The graph of a quadratic function with vertex $(2, -4)$ is shown in the figure below. Find the domain and the range.



domain: $(-\infty, \infty)$

range: $[-4, \infty)$ or $x \geq -4$

32. Use the quadratic formula to solve for x.

$$2x^2 + 5x - 1 = 0$$

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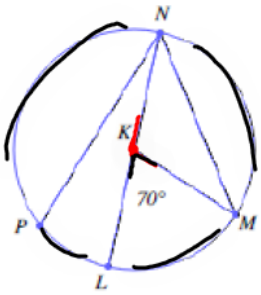
17. In the circle below, K is the center, $\overline{LN}$ is a diameter, and $m\angle LKM = 70°$. Use this information to find the following.



(a) Give a central angle ∠NKM or ∠MKL

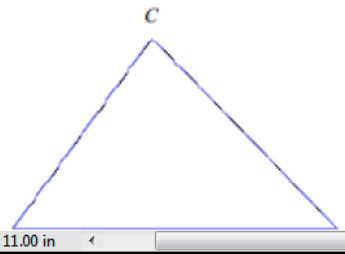
(b) Give a minor arc $\overset{\frown}{MN}$ or $\overset{\frown}{LM}$ or $\overset{\frown}{PL}$ or $\overset{\frown}{PN}$

(c) Give a semicircle NML or LPN

(d) Find $m\overset{\frown}{LM}$ 70°

(e) Find $m\overset{\frown}{LMN}$ 180°

18. Use a compass and ruler to circumscribe a circle about the triangle.



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