SWBAT understand the 30 - 60 - 90 triangle and apply it to the unit circle.

SWBAT understand the 45 - 45 - 90 triangle and apply it to the unit circle.

Agenda:

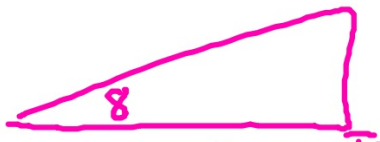
- Warm-Up
- Find the correct side lengths of the 30 - 60 - 90
- Find the correct side lengths of the 45 - 45 - 90
- Use those measurements to find sin, cos, tan
- Apply them to the unit circle
- Exit Card

Warm - Up

The second hand on a clock makes one revolution in one minute. What is the linear velocity, in centimeters per second, of a point on the tip of the second hand, if the second hand is 12 cm from center to tip?

$$\frac{1\ \text{REV}}{1\ \text{MIN}} \cdot \frac{1\ \text{MIN}}{60\ \text{SEC}} \cdot \frac{2\pi\ \text{rad}}{1\ \text{rev}} \cdot \frac{12\ \text{cm}}{1\ \text{rad}} = 1.26\ \frac{\text{cm}}{\text{sec}}$$

62)



x 16.86

5ft

$\tan 8° = \frac{x}{120}$

$120 \tan 8° = x$

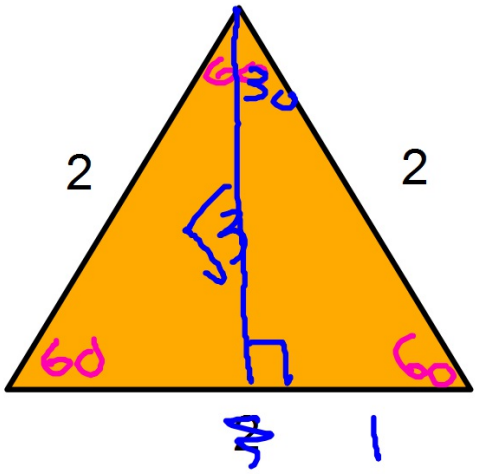
$16.86 = x$

21.86ft

Exit Card From Yesterday

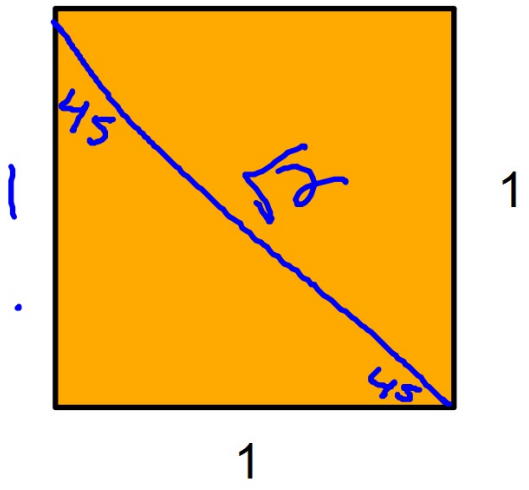
A Merry-Go-Round travels at an angular velocity of 10 revolutions per minute. What is the linear velocity, in feet per minute, of a person that is sitting 7 feet from the center of the Merry-Go-Round?

Use an equilateral triangle to create the 30-60-90

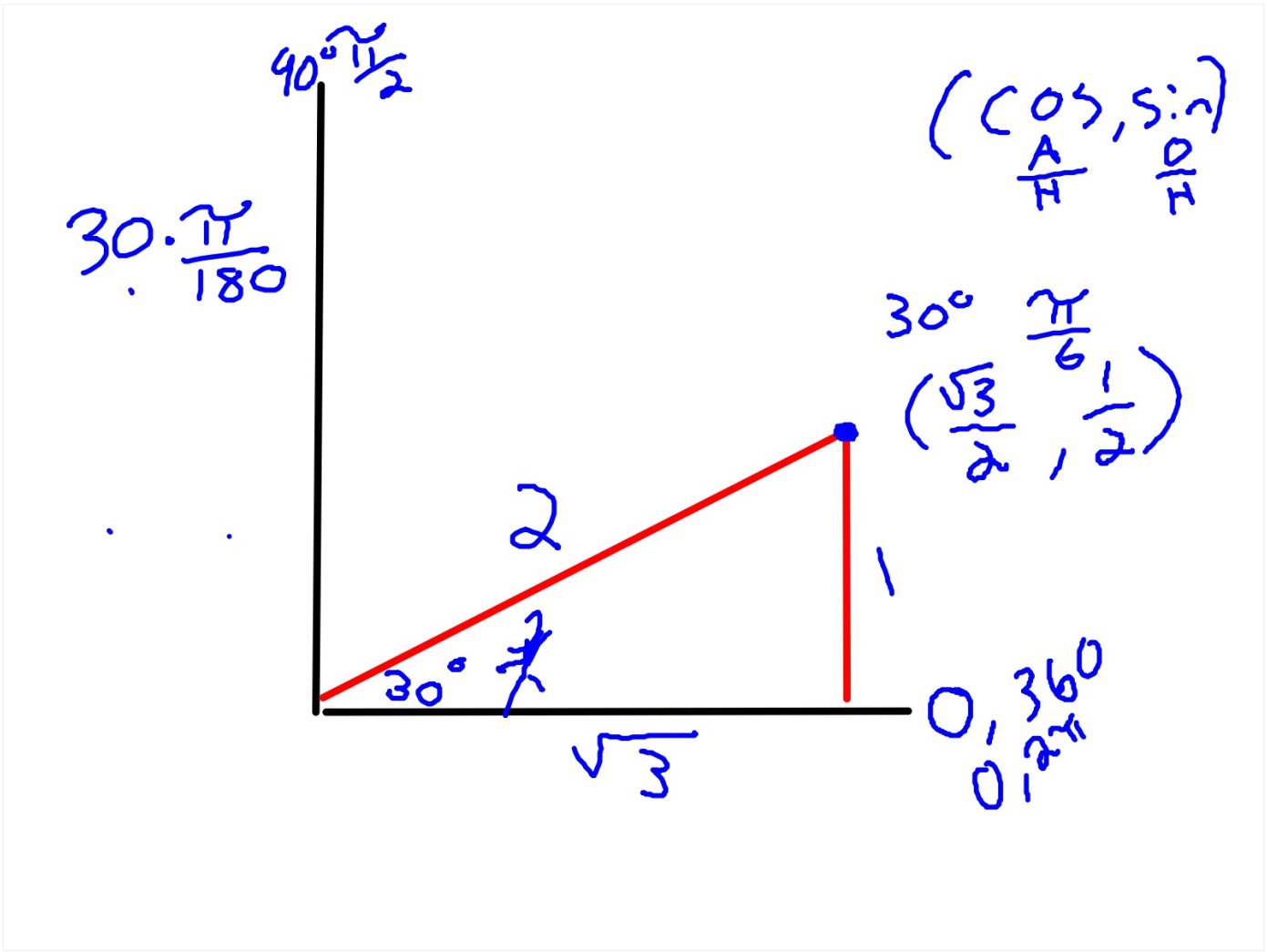


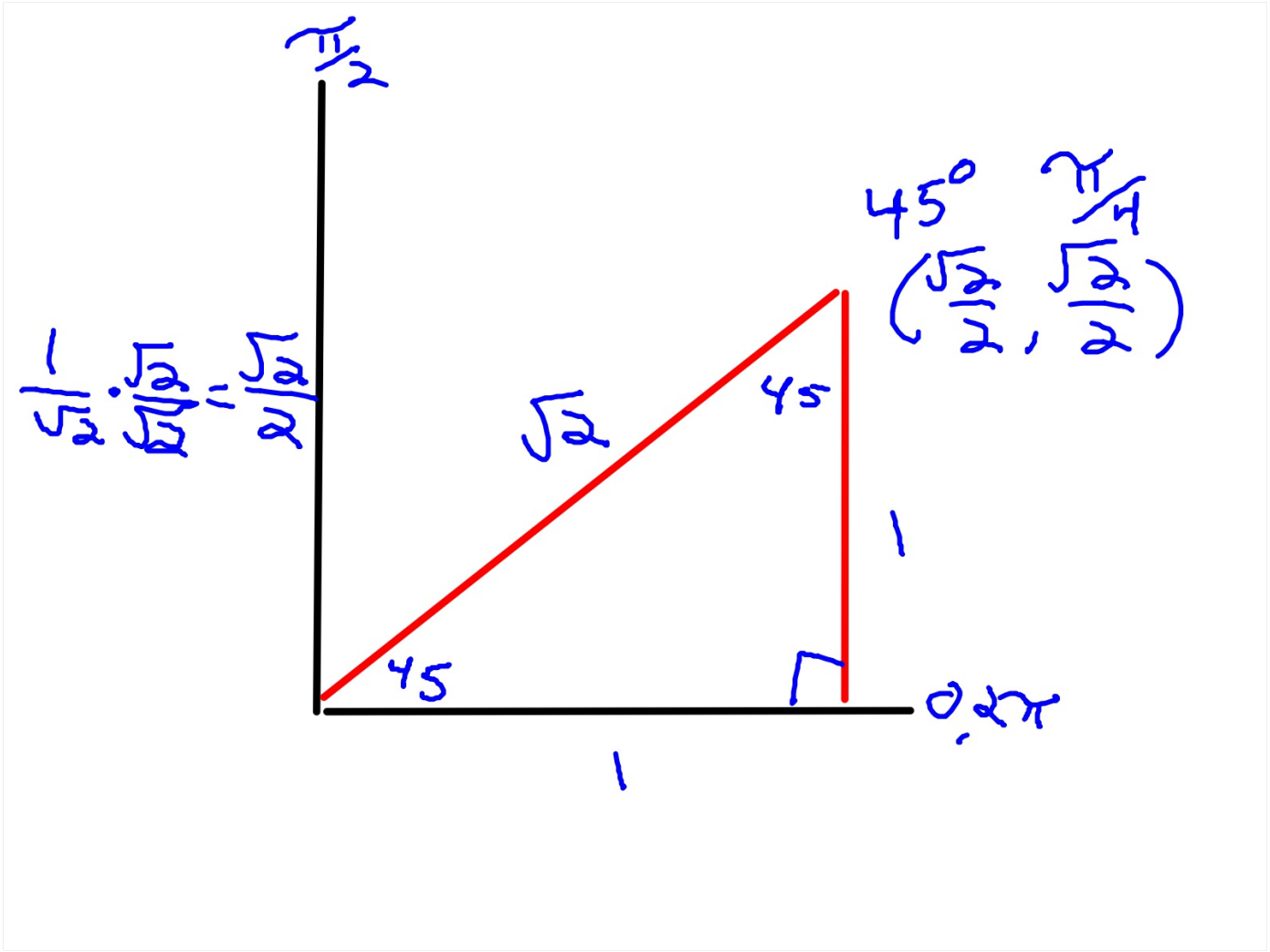
$$a^2+b^2=c^2$$
$$1^2+b^2=2^2$$
$$1+b^2=4$$
$$b^2=3$$
$$b=\sqrt{3}$$

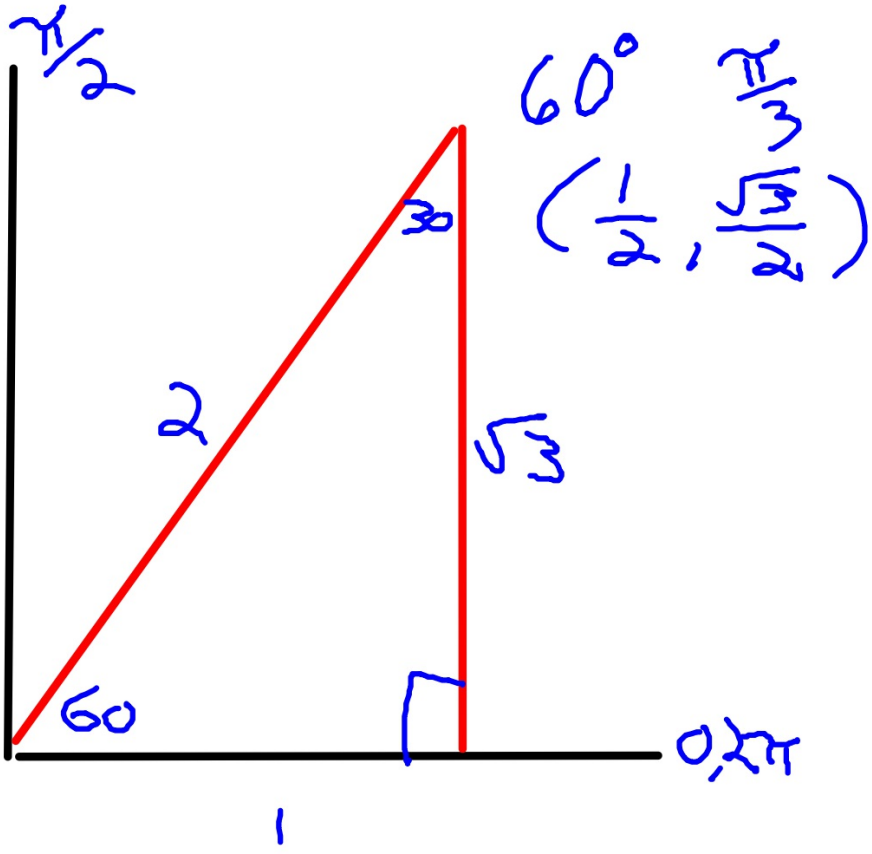
Using an square to create the 45 - 45 - 90

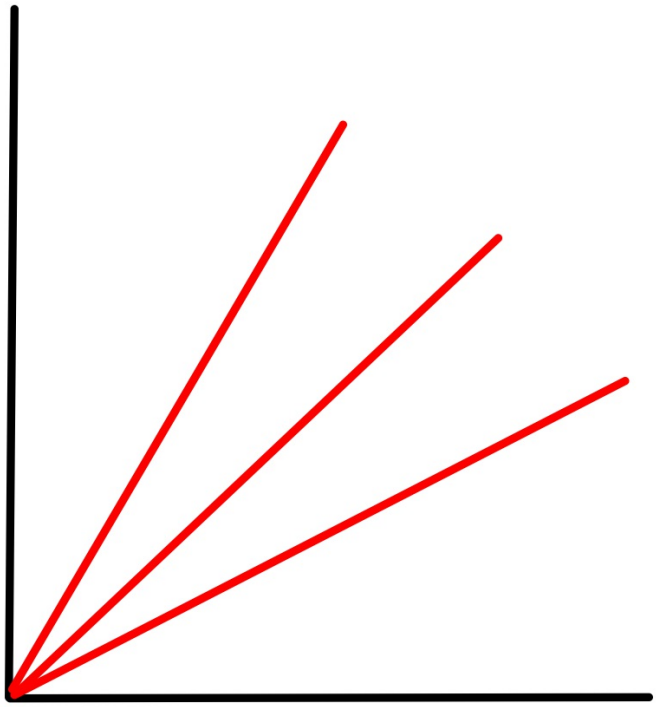


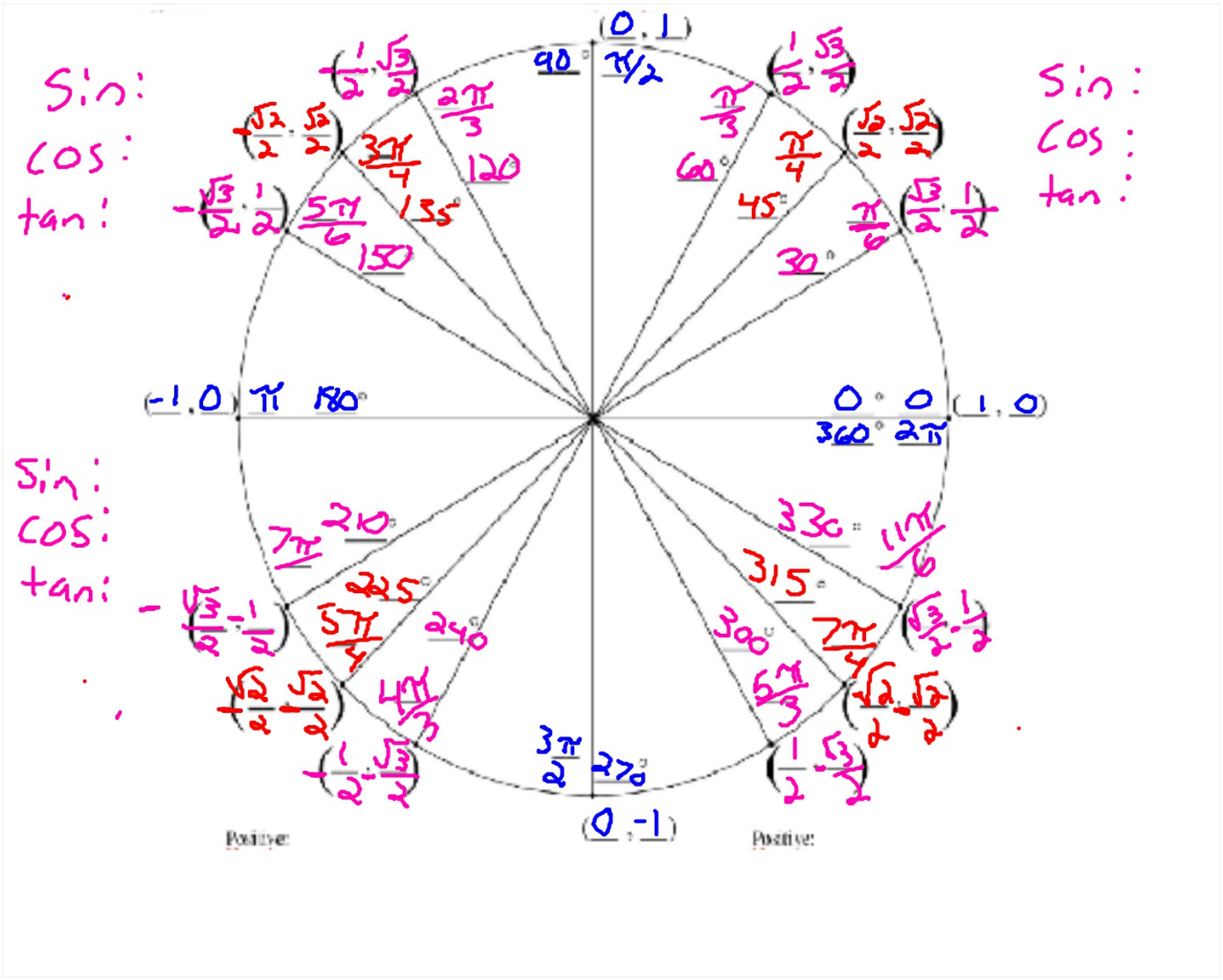
$$1^2 + 1^2 = c^2$$
$$2 = c^2$$
$$\sqrt{2} = c$$


90° π/2
30 · π/180
(cos, sin)
A/H O/H
30° π/6
(√3/2, 1/2)
2
1
30°
√3
0, 360
0, 2π


π/2
45°
π/4
(√2/2, √2/2)
1/√2 · √2/√2 = √2/2
√2
45
1
45
0, 2π
1


π/2
60°
π/3
(1/2, √3/2)
30
2
√3
60
0, 2π
1




Sin:
Cos:
tan:
Sin:
Cos:
tan:
Sin:
Cos:
tan:
(0, 1)
90°
π/2
(1, 0)
0° 0
360° 2π
(-1, 0)
π 180°
(0, -1)
3π/2 270°
30°
45°
60°
120
135°
150
210°
225°
240°
300°
315°
330°
Positive:
Positive:

Finding Tangent in terms of sine and cosine