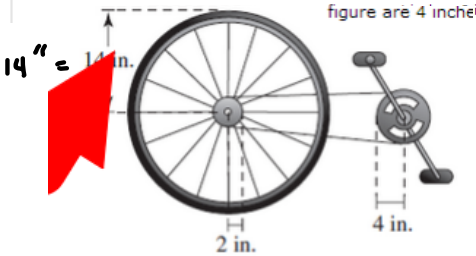
–/6 points LarTrig9 1.1.068.

The radii of the pedal sprocket, the wheel sprocket, and the wheel of the bicycle in the figure are 4 inches, and 14 inches, respectively. A cyclist is pedaling at a rate of 1 revolution per second.



$\theta = \frac{s}{r}$ is the eq'n, here.

$\Rightarrow s = r\theta$

$\left(\frac{1\,rev}{sec}\right) \times \left(\frac{2\pi\ rad}{1\,rev}\right) \times (4\,in) = \frac{8\pi\ in}{sec}$ = Linear speed of front sprocket

front sprocket rev/sec. Want speed of Bike

Angular speed $\frac{\theta}{t}$ thing

Now, angular speed of rear sprocket, given speed of chain.

$\theta = \frac{s}{r}$

Rear sprocket Angular speed $= \left(\frac{8\pi\ in}{sec}\right) \times \left(\frac{1}{2\,in}\right) = \frac{4\pi\ rad}{sec}$.

Divide by radius to get angle.

So linear speed of the rear wheel is:

$\frac{s}{t} = \frac{r\theta}{t} = \frac{s}{sec} = \frac{r\theta}{sec} = \frac{(14\,in)(4\pi\,rad)}{sec}$

$= \frac{56\pi\ in}{sec}$.

So $\frac{feet}{sec}$: $\left(\frac{56\pi\ in}{sec}\right)\left(\frac{1\ ft}{12\ in}\right) = \frac{56\pi}{12}\ \frac{ft}{sec}$

$\frac{28}{6} = \frac{14}{3}$ $= \frac{14\pi}{3}\ \frac{ft}{sec}$

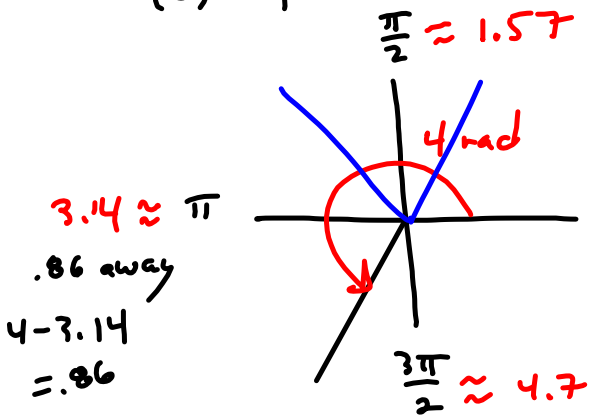
$\left(\frac{14\pi}{3}\right)\left(\frac{ft}{sec}\right)\left(\frac{1\ mi}{5280\ ft}\right)\left(\frac{60\ sec}{1\ min}\right)\left(\frac{60\ min}{1\ hr}\right)$

$\left(\frac{14\pi}{3}\ \frac{ft}{sec}\right)\left(\frac{60\ \frac{mi}{hr}}{88\ \frac{ft}{sec}}\right) = \frac{35}{11}\pi\ mi/hr \approx 9.99598\ mi/hr$

14 b

Sketch the angle in std position.

(b) 4



.86 away

4 − 3.14 = .86

4 is .71 away

$\frac{9.42}{2}$

4.71

$\frac{3.14}{2} = 1.57$

1 rad ≈ 60°

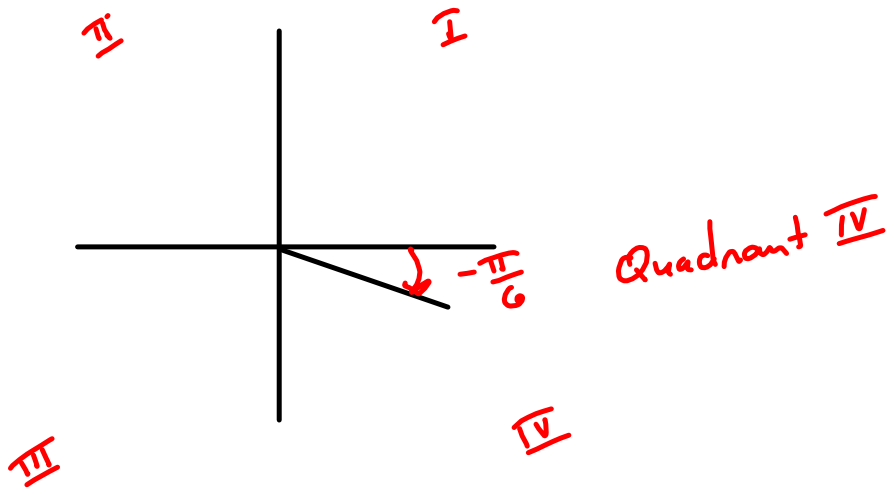
≈ 57°

1 rev.: $\frac{2\pi \text{ rads}}{360^\circ} = \frac{\pi \text{ rad}}{180 \text{ degrees}}$

$$1 \text{ rad} = (1 \text{ rad})\left(\frac{180 \text{ degrees}}{\pi \text{ rad}}\right)$$

$$\approx 57.29577951^\circ$$

```
     3.181818182
Ans▸Frac
           35/11
Ans*π
     9.995976625
180/π
     57.29577951
```


II
I
$-\frac{\pi}{6}$
Quadrant IV
III
IV