To help with the Ferris Wheel questions in the application questions, use the following:

$$x = r\cos\left(\frac{2\pi t}{\text{time}}\right) \qquad y = h - r\sin\left(\frac{2\pi t}{\text{time}}\right)$$

where r = radius, time is in seconds, t is the parameter, 2pi for one revolution, and h = height of the center of the wheel

Example: A ferris wheel spins clockwise making one revolution every 3 minutes. Mr. V, who does not like heights, gets on the ferris wheel at 4 feet and reaches a maximum height of 120 feet (oh boy, that's high). Write a set of parametric equations to model this situation.

$r = \frac{120-4}{2} = \frac{116}{2} = 58\text{ft}$

$\text{time} = 3 \cdot 60 = 180\text{sec}$

$h = 58+4 = 62\text{ft}$ ← center of ferris wheel

$x = 58\cos\left(\frac{2\pi t}{180}\right) = 58\cos\left(\frac{\pi t}{90}\right)$

$y = 62 - 58\sin\left(\frac{\pi t}{90}\right)$ (should be the same)

Lastly, if the question says the ferris wheel spins counterclockwise, then flip the sine and cosine meaning the x equation would have sine and the y equation would have cosine. If you graph the ferris wheel and trace the graph, you will clearly see which way the ferris wheel turns. If the trig functions are in the wrong equations, follow up questions (such as where is the person riding at when t = 4) your answer will be incorrect.