**Pre-Calculus Test Review Vectors, Parametric and Polar Equations**

1. Write the pair of parametric equations *x* = -2 cos *θ* and *y* = 4sin *θ* in rectangular form.
2. Rewrite *y* = $t^{2}$ + 9 and *x* = 3*t* – 1 in rectangular form.
3. Use the parameter *t* = $3x-4$ to determine the parametric equations that can represent *y* = $x^{2}$ + 5.
4. Jose kicked a soccer ball with initial velocity of 85 feet per second at an angle of 52˚ with the ground.

Write parametric equations to represent this situation.

1. Graph the curve given by *x* = -2*t* + 5 and *y* = $t^{2}$ over the interval –3 ≤ *t* ≤ 3?

1. A force $F\_{1}$of 12 newtons pulls due north. A force $F\_{2}$of 16 newtons pulls due west. Find the magnitude and direction of the resultant force.
2. A constant force of 12 newtons is being applied on an object in the direction of due east at the same time that a constant force of 15 newtons is being applied on the object in the direction of due south. What is the magnitude and direction of the force?
3. Each chain is supporting part of the weight of the wooden sign. If the



chain on the left is attached at a 60$°$angle to the horizontal has a force of

10 pounds and the chain on the right is attached at a 57$°$angle to the

horizontal has a force of 8 pounds, then how much does the wooden

sign weigh?

1. Graph the polar coordinates ( -2, $\frac{π}{4}) and (3, -310°) $on the given graph.



1. Graph $r=4 and θ=\frac{π}{3}$
2. Graph *r* = 2 + 2 sin *θ*.



1. Graph the polar equation *r* = 4 cos *θ*.

1. Find polar coordinates for the point with rectangular coordinates ($\sqrt{2}$ , $\sqrt{2}$) if 0 ≤ *θ* ≤ 2π and *r* ≥ 0.
2. Given the polar coordinates (2, 90**°**). Find rectangular coordinates for this point.
3. Write the polar equation *r* = 5 in rectangular form.
4. Write the rectangular equation $x^{2}$ + $y^{2}$ – 4*x* = 0 in polar form.
5. Write the polar equation $r^{2}$– 3*r* sin *θ* = 0 in rectangular form.