

1. a)  $v^2/R = 5 \text{ m/s/s}$   
 b)  $F = ma = 5,000 \text{ N}$   
 c)  $f = ma$   
 $(\text{coeff})(mg) = ma$   
 $(\text{coeff}) = a/g = 0.5$
  
2. a)  $F = ma = mv^2/R = 2,000 \text{ N}$   
 b) at A: normal force = 1,000 N down  
 at B: normal force = 3,000 N up  
 c)  $F = mg \dots ma = mg \dots a = g$   
 $10 = v^2/R$   
 $v = 70 \text{ m/s}$
  
3. a)  $a = v^2/R = 2.5 \text{ m/s/s}$   
 b)  $F = ma = 125 \text{ N}$   
 c) same 125 N  
 d)  $500 - 125 = 375 \text{ N}$   
 e)  $500 + 125 = 625 \text{ N}$
  
4. a)  $a = g$   
 $v^2/R = 10$   
 $v = 2.24 \text{ m/s}$   
 b) zero ....
  
5. a)  $a = g \tan(\text{angle})$   
 $\tan(\text{angle}) = v^2/Rg = 100/20$   
 $\text{angle} = \underline{\hspace{2cm}}$   
  
 b)  $T_x = ma \dots T_y = mg$   
 $T_x^2 + T_y^2 = T^2$  (you do the math)  
  
 c)  $T_x = \text{net force} \dots T_y = mg$
  
6. a)  $a = g \tan(\text{angle})$   
 $v^2/R = g \tan(\text{angle})$  (you do the math)  
 b)  $F = ma = mv^2/R$  (you do the math)  
 c) same as (b)  
 d)  $N^2 = (\text{cent } F)^2 + (mg)^2$  (you do the math)