Engineering Physics I – Fall 2015
Quiz 3 – September 24, 2015
Name:

1. Convert $2x10^3$ cm^2 into m^2

a) $6x10^3$ m/min^2 **c) $3.6x10^4$ m/min^2**

b) $6x10^4$ m/min^2 d) $1.6x10^{-1}$ cm^2

Recall that you must multiply 1 m/100 cm TWICE to convert the cm^2 to m^2.

$$2\times10^3 cm^2 \times \frac{1\ m}{100cm} \times \frac{1m}{100cm} = 2\times10^{-1} m^2$$

2. Which is true during uniform circular motion? (circle all that apply)

$a_{//} = 0$ $a_\perp = 0$ **$|\mathbf{a}| = 0$** $v_\varphi = 0$ **$v_\rho = 0$**

Only the last and first equations are valid during uniform circular motion. During uniform circular motion the magnitude of the velocity does not change but there is a centripetal acceleration perpendicular to the velocity. The velocity is constant in the azimuthal (phi) direction and has no radial component.

3. True or **false** To find the angle for which a projectile will reach its maximum horizontal distance (range) you need to know the projectile's initial velocity.

A projectile will reach its maximum horizontal distance if it is launched at an angle of 45 degrees. You do not need to know the initial velocity (though the actual distance traveled in the horizontal direction will depend on the initial velocity).

4. True or **false** Increasing a projectile's initial velocity increases the maximum horizontal distance (range) but not the maximum height.

Both the maximum height h and the maximum distance or range d depend on the initial velocity.