Quiz 8
March 29, 2001

3. A projectile starting with a potential energy, PE_G = **10 Joules** , is fired straight upward with a kinetic energy, KE = **50 Joules**. When the projectile has potential energy, PE_G = **30 Joules**, what is the **kinetic energy** of the projectile?

The only force acting is gravity and therefore, energy is conserved.

$$KE_0 + PE_0 = KE + PE$$
$$(50\text{ J}) + (10\text{ J}) = KE + (30\text{ J})$$
$$KE = 30\text{ J}$$

a) 20 Joules
*b) 30 Joules
c) 40 Joules
d) 60 Joules
e) 80 Joules

4. A spring fires a projectile, with mass m , straight up into the air. What is the magnitude of the **net force** acting on the mass at its highest point.

Throughout the flight of the projectile, the only force acting is gravity, $F_G = mg$. At the highest point, v is zero, but the net force is still F_G. At that point, gravity changes the object's direction from up to down.

*a) mg
b) 2 mg
c) zero
d) $1/2mg^2$
e) kx