Assignment 11

1. What is the domain of vector valued function $r(t) = ti + \sqrt{t}j + \ln\,(t-3)k$?
2. Find the integral of $r(t) = \sin\,\frac{\pi t}{2}i + \sqrt{t}j + (t^3)k$ from 0 to 2.
3. Find the arc length of $r(t) = 5\,\cos\,ti + 5\sin\,tj + tk$ from $t = 0$ to $t = \frac{\pi}{2}$.
4. Find the unit tangent and unit normal vector of $r(t) = 3\,\cos\,ti + 3\sin\,tj + 4tk$.
5. What is the curvature of $r(t) = 3\,\cos\,ti + 3\sin\,tj + 4tk$?
6. What is the curvature of straight line?
7. let $r(t) =< 2\,t, 3\,\sin\,2t, 3\,\cos\,2t >$. Find the point on the curve after traveling for a distance of $\frac{\pi\,\sqrt{10}}{3}$ along the curve from $t = 0$ in the direction of increasing arc length.