MATH 261 Quiz5 Name: .
Student number:

Show all work. 5 points each.

1) Use the formula $\kappa(t) = \dfrac{|\mathbf{r}'(t) \times \mathbf{r}''(t)|}{|\mathbf{r}'(t)|^3}$ to find the curvature of $\mathbf{r}(t) = t^2\mathbf{i} + t\mathbf{k}$

2)Find the velocity, speed and acceleration of a particle with the given position function. Sketch the path of the particle and draw the velocity vectors at time $t = 0$ and $t = 1$. $\mathbf{r}(t) = \langle t^2 - 1, t \rangle$