

The angle of intersection of the two curves is the angle between the two tangent vectors to the curves at the point of intersection. Since $\mathbf{r}'_1(t) = \langle 1, 2t, 4t^3 \rangle$ and $t = 0$ at $(0, 0, 0)$, $\mathbf{r}'_1(0) = \langle 1, 0, 0 \rangle$ is a tangent vector to $\mathbf{r}_1$ at $(0, 0, 0)$. Similarly, $\mathbf{r}'_2(t) = \langle \cos t, 5 \cos 5t, 1 \rangle$ and since $\mathbf{r}_2(0) = \langle 0, 0, 0 \rangle$, $\mathbf{r}'_2(0) = \langle 1, 5, 1 \rangle$ is a tangent vector to $\mathbf{r}_2$ at $(0, 0, 0)$. If θ is the angle between these two tangent vectors, then $\cos \theta = \frac{1}{1\sqrt{27}} \langle 1, 0, 0 \rangle \cdot \langle 1, 5, 1 \rangle = \frac{1}{\sqrt{27}}$ and $\theta = \cos^{-1}\left(\frac{1}{\sqrt{27}}\right) \approx 79^\circ$.