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# Quiz 2

1] dist between pt $(0, 1, 6)$ and plane $x + y + 2z = 1$

$$d = \frac{|\vec{PR} \cdot n|}{|n|} \qquad n = \langle 1, 1, 2 \rangle \quad R = \langle 0, 0, 0 \rangle$$

$$\vec{PR} = \langle 0-0, 0-1, 0-6 \rangle = \langle 0, -1, -6 \rangle$$

$$d = \frac{|\langle 0, -1, -6 \rangle \cdot \langle 1, 1, 2 \rangle|}{\sqrt{1^2 + 1^2 + 2^2}} = \frac{|1(0) + 1(-1) + 2(-6)|}{\sqrt{6}}$$

$$\boxed{d = \frac{13}{\sqrt{6}} = 5.307}$$

2] find angle between $r_1(t) = \langle t+1, 2t+3, -3t-1 \rangle$ & $r_2(s) = \langle -4s, 1, 2s+2 \rangle$ . - acute/rads

$$\theta = \cos^{-1}\left(\frac{A \cdot B}{|A||B|}\right) \qquad V(r(t)) = \langle 1, 2, -3 \rangle \quad V(r(s)) = \langle -4, 0, 2 \rangle$$

$$= \cos^{-1}\left(\frac{-4(1) + (2)(0) + (-3)(2)}{\sqrt{1^2 + 2^2 + (-3)^2} \cdot \sqrt{(-4)^2 + 0^2 + 2^2}}\right) = \cos^{-1}\left(\frac{-10}{\sqrt{14} \cdot \sqrt{20}}\right)$$

$$\cos^{-1}\left(\frac{-10}{\sqrt{14} \cdot \sqrt{20}}\right) = |2.211 - \pi| \boxed{= 0.930}$$