

12.3

2 Yes

#4 No

#6 5π #10 $\sqrt{14}$

#18 False

#20 True

#24 a) $r(s) = \left(-5 + \frac{3s}{\sqrt{14}}\right)i + \frac{2s}{\sqrt{14}}j + \left(5 + \frac{s}{\sqrt{14}}\right)k$

b) $\left\langle -5 + 30/\sqrt{14}, 20/\sqrt{14}, 5 + 10/\sqrt{14} \right\rangle$

#28 $r(s) = \frac{1}{9}[(27s + 13\sqrt{13})^{2/3} - 4]i + \frac{1}{27}[(27s + 13\sqrt{13})^{2/3} - 4]^{3/2}j$

#30 $r(s) = \sin\left(1 + \frac{s}{2}\right)i + \cos\left(1 + \frac{s}{2}\right)j + \sqrt{3}\left(1 + \frac{s}{2}\right)k$

#42 a) $\frac{1}{2}\sqrt{4+9t}$

b) $\frac{1}{2}\sqrt{4+9t}$

c) $\frac{2}{27}(11\sqrt{22} - 4)$