16) $v(4) = \lim_{t \to 4} \frac{s(t) - s(4)}{t-4}$

$= \lim_{t \to 4} \frac{-16t^2 + 105t + 45 - (-16(4)^2 + 105(4) + 45)}{t-4}$

$= \lim_{t \to 4} \frac{-16(t^2 - 4^2) + 105(t-4)}{t-4}$

$= \lim_{t \to 4} \frac{[-16(t+4) + 105]\cancel{(t-4)}}{\cancel{(t-4)}}$

$= -16(4+4) + 105 = -256 + 105 = \boxed{-151 \frac{ft}{sec}}$

Note, it's going downward.

17) rate of Δ of V wrt @ $5\mu m$ is

$\lim_{h \to 0} \frac{V(5+h) - V(5)}{h} = \lim_{h \to 0} \frac{\frac{4}{3}\pi(5+h)^3 - \frac{4}{3}\pi 5^3}{h}$

$= \lim_{h \to 0} \frac{4\pi}{3h}\left[5^3 + 3(5)^2h + 3(5)h^2 + h^3 - 5^3\right]$

$= \lim_{h \to 0} \frac{4\pi}{3\cancel{h}}\left[\cancel{h}(75 + 15h + h^2)\right]$

$= \frac{4\pi}{3} \cdot 75 = 4\pi(25) = \boxed{100\pi \frac{(\mu m)^3}{\mu m}}$

18) Previous page

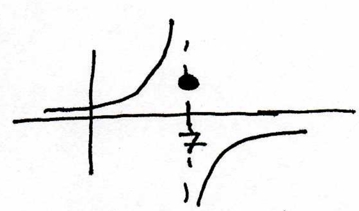
19, 20) Deleted

21) $\boxed{\text{False}}$ since f is cont. @ 5, $\lim_{x \to 2} f(4x^2 - 11) = f\left(\lim_{x \to 2}(4x^2 - 11)\right)$

$= f(4 \cdot 2^2 - 11) = f(5) = -7.$

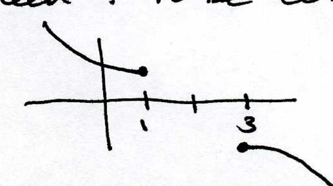
22) $\boxed{\text{False}}$ $g(f(3)) = g(4) = 5.$

23) $\boxed{\text{False}}$ counterexample



24) $\boxed{\text{False}}$ we need f to be continuous to use IVT

Ex:



25) $\boxed{\text{False}}$ If $f(x) > 1$ for all x and $\lim_{x \to 0} f(x)$ exists,

then $\lim_{x \to 0} f(x) \geq 1$.