1 find the points on the curve. $y = 2x^3 + 3x^2 - 12x + 2$.

$6x^2 + 6x - 12 = -12$.

where
- a. The tangent line is horizontal
- b. The function $f(x) = y$ is increasing.
- c. decreasing.
- d. The tangent line is parallel to $y = -12x$.

2. The inverse function $f(x)$ is denoted by $f^{-1}(x)$.

and if we know $f(1) = 2$. and $f'(1) = 3$.

Then what is $(f^{-1})'(2)$

3. find $f'(x)$ for $f(x) = \ln|2\sin 2x|$.

4. Suppose $f(\frac{4\pi}{3}) = 2$. and $f'(4\pi/3) = -7$, Let $g(x) = f(x)^{\tan x}$

and $h(x) = \dfrac{\sec x}{f(x)}$.

then $g'(\frac{4\pi}{3}) =$ _____.

$h'(\frac{4\pi}{3}) =$ _____.

5. If $f(x) = \log_4 x^3$, $f'(x) = ?$

6. find the slope of the line tangent to the curve.

$$xy = \tan^{-1}(8y^2 - \sin x).$$

at $(x, y) = (\frac{\pi}{2}, \frac{1}{2})$

7 find. $\lim_{x \to 0} \frac{\tan 3x}{\sin 4x}$.

$\lim_{x \to \frac{\pi}{2}} \frac{\cos x}{\tan 2x}$ $(\frac{\pi}{2} - x)$. $= \frac{\sin \frac{\pi}{2} - x}{\tan \frac{\pi}{2} - 2x}$ ..

8 find y' for. $y = x^{\sinh x}$.

9 Which of these is equal to $\frac{\sinh x \cosh x}{\sinh 2x}$.

A $\frac{1}{4}$

B $\frac{1}{2}$

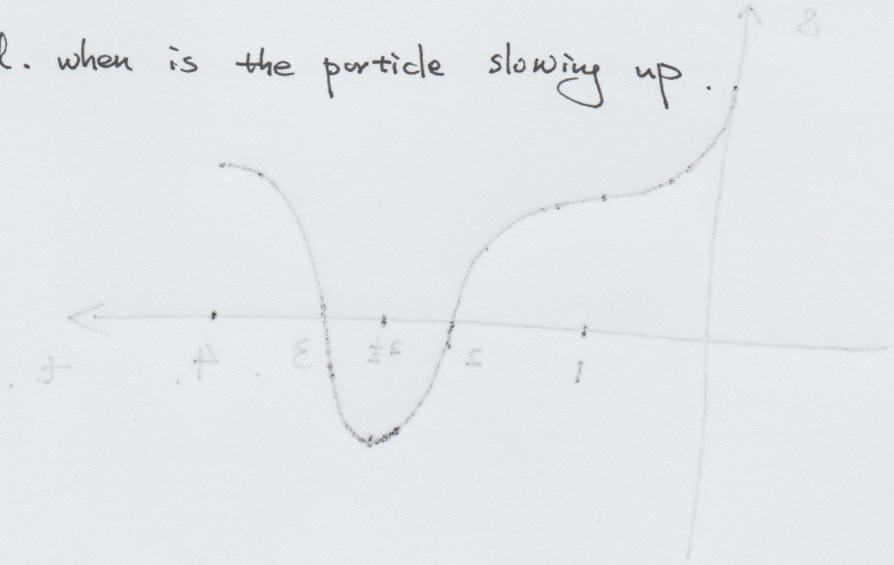
C 1

D 2

E 4.

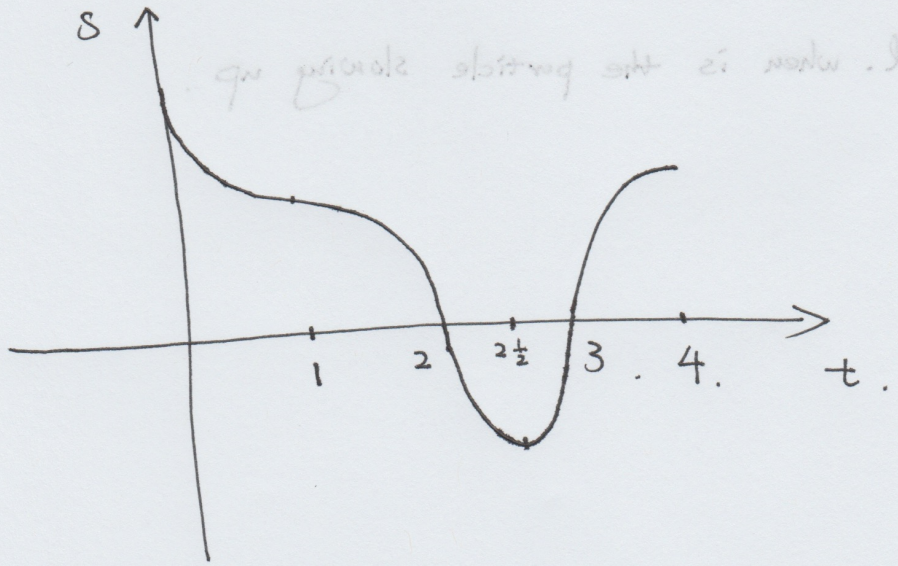
10. A particle has position is at time t given by $s(t) = \frac{1}{3}t^3 - 3t^2 + 8t + 161$

On the time interval. when is the particle slowing up.



11. There is. 100 grams of certain radioactive elements at noon, At 2:00 pm there is 50 grams. How much will there be at 3:00 pm.

12. the relation of the position of a particle. S and the time t is shown below.



When is the particle speeding up ?