

Math 1121

Homework #10

20, #72

$$\underline{\#20} \quad g(x) = \frac{x^3 - 4x}{\sqrt{x}} = (x^3 - 4x) x^{-1/2}$$

$$= x^{2.5} - 4x^{.5}$$

$$g'(x) = 2.5x^{1.5} - 2x^{-.5}$$

$$\underline{\#72} \quad s(t) = -16t^2 + 144 \quad \leftarrow \text{position}$$

$$s'(t) = -32t \quad \leftarrow \text{velocity}$$

a) velocity at time 1 = $s'(1) = -32 \cdot 1 = -32$

- . . . - 2 = $s'(2) = -32 \cdot 2 = -64$

b) time when pos = 0 :

$$-16t^2 + 144 = 0$$

$$144 = 16t^2$$

$$t^2 = 9$$

$$t = 3$$

c) velocity at impact is velocity at $t=3$

$$s'(3) = -32 \cdot 3 = -108$$