(1.) (1 pt each) True / False--Circle your choice. Circle T only if the statement is ***always*** true. [No explanation necessary.]

(a) If $f'(x) = g'(x)$ for all x, then $f(x) = g(x)$ for all x. T (F)

(b) If $f''(a) = 0$, then f has an inflection point at $x = a$. T (F)

(c) If $x = p$ is not a critical point of f, then $x = p$ is not a local maximum of f. T (F)

(d) If $\int_0^2 f(x)dx = 6$ then $\int_0^4 f(x)dx = 12$. T (F)

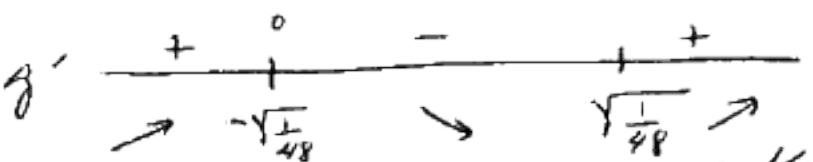
(e) If $\int_0^2 f(x)dx = 6$ and $h(x) = 5f(x)$ then $\int_0^2 h(t)dt = 30$. (T) F

(2.) (4 pts.) Is the function $g(x) = x^3 - \frac{x}{16}$ invertible? No

Below, give a clear justification for your answer.

NOTE: $g'(x) = 3x^2 - \frac{1}{16}$, so $g'(x) = 0$ if $x^2 = \frac{1}{48}$

$\rightarrow x = \pm\sqrt{\frac{1}{48}} \approx \pm .1443$



The function is increasing, then decreasing & then increasing? Since g is continuous, it is not invertible.

(3.) (3 pts.) [No need to simplify, but show ***all*** of your work. **Circle** your answer.] Find the derivative of $s(x) = \sin^5(3x^2 - 2)$. $= [\sin(3x^2-2)]^5$

$s'(x) = 5\sin^4(3x^2-2)\cdot\cos(3x^2-2)(6x)$ ok to leave or

$s'(x) = 30x\sin^4(3x^2-2)\cos(3x^2-2)$