

This quiz is worth 10 points and you have 10 minutes to complete it. Show all work and circle your final answers.

Calculators are NOT allowed today.

1. (10 pts) Determine whether each of the following statements is true or false.

- (a) **T F** $\frac{d}{dx}(-4x^5 + 3x^2 + 9x + 17) = -20x^4 + 6x + 9$.
- (b) **T F** If $f'(x) < 0$ for all $x \in (0, 3)$, then f is decreasing on $[0, 3]$.
- (c) **T F** If f is continuous everywhere, and if $f(2) = -2$ and $f(3) = 1$, then f must have a root somewhere in $(2, 3)$.
- (d) **T F** The statement $\frac{dy}{dx}(4 - x^3) = -3x^2$ means that the derivative of $4 - x^3$ is $-3x^2$.
- (e) **T F** If f' changes sign at $x = 3$, then $f'(3) = 0$.
- (f) **T F** If f is continuous and differentiable on $[-2, 2]$ with $f(-2) = 4$ and $f(2) = 0$ then there is some $c \in (-2, 2)$ with $f'(c) = 1$.
- (g) **T F** If $f(x) = x(x - 1)$, then $f'(x) = 2x - 1$.
- (h) **T F** If $f'(-2) = 3$ and $g'(-2) = -4$, then $(fh)'(-2) = -12$.
- (i) **T F** If f is continuous at $x = c$, then f is differentiable at $x = c$.
- (j) **T F** If f is continuous on the interval $(2, 4)$, then f must have a maximum value and a minimum value on $(2, 4)$.