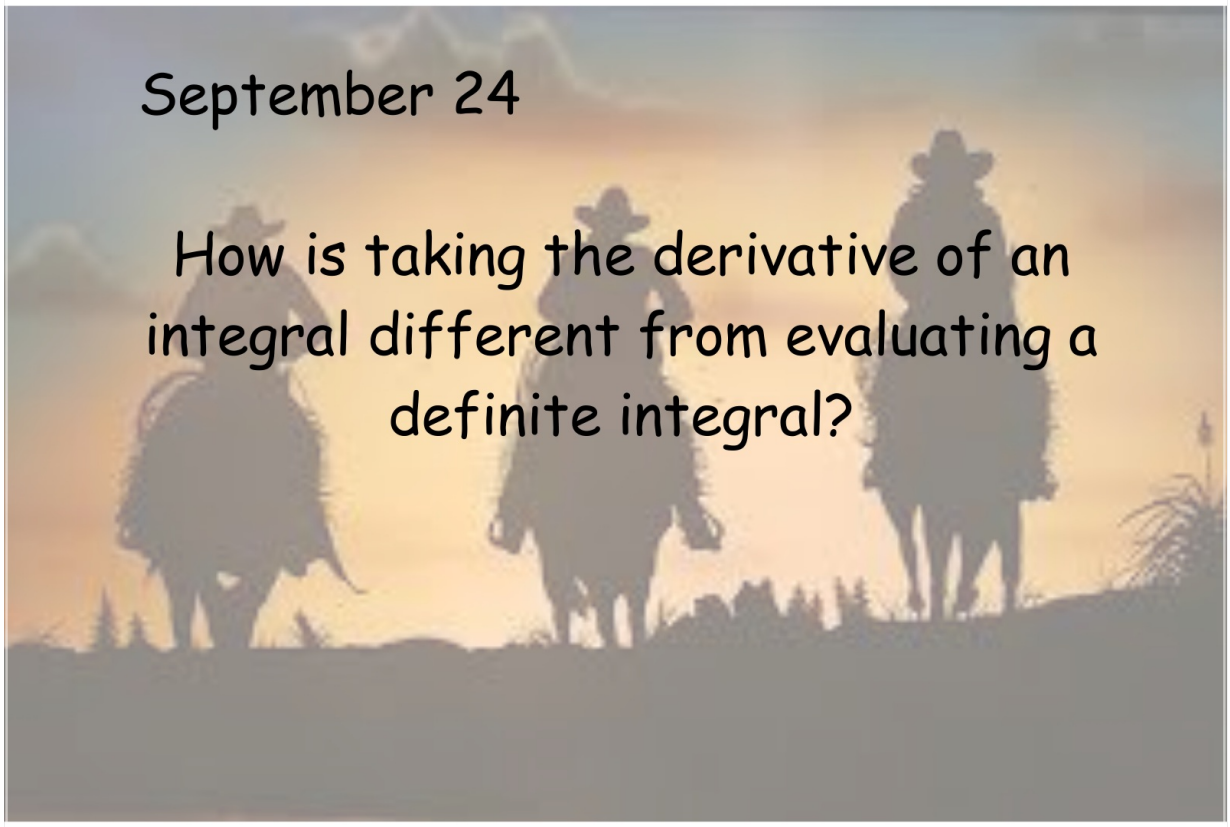

September 24

Students will verbally explain how to
find the derivative of a definite integral
(using the words:
chain rule, derivative, function, bound…)

FTC - Part 2

$$\frac{d}{dx}\left(\int_{g(x)}^{h(x)} f(t)\,dt\right) = f\left(h(x)\right)\cdot h'(x) - f\left(g(x)\right)\cdot g'(x)$$

The original function evaluated at the upper bound times the derivative of the upper bound

minus

The original function evaluated at the lower bound times the derivative of the lower bound.

$$\frac{d}{dx}\left(\int_{x^2}^{5x} e^{\cos t}\,dt\right)$$

$$e^{\cos 5x}(5) - e^{\cos x^2}(2x)$$

$$\frac{d}{dx}\left(\int_{\sin x}^{7x^3} \ln(\sec t)\,dt\right)$$

$\ln(\sec 7x^3)(21x^2) - \ln(\sec \sin(x))(\cos(x))$

$$\frac{d}{dx}\left(\int_{4x^3}^{4x^4} \sqrt{\cos t}\,dt\right)$$

$$= 4\sqrt{\cos(4x)} - 3x^2\sqrt{\cos x^3}$$