September 17

SWBAT:

Apply the Properties of Definite Integrals to evaluate integrals.

Order of Integration	$\int_a^b f(x)\,dx = -\int_b^a f(x)\,dx$
Zero	$\int_a^a f(x)\,dx = 0$
Constant Multiple	$\int_a^b k \cdot f(x)\,dx = k\int_a^b f(x)\,dx$ For any number k
Additivity	$\int_a^b f(x)\,dx + \int_b^c f(x)\,dx = \int_a^c f(x)\,dx$
Constant Multiple (special case)	$\int_a^b -f(x)\,dx = -\int_a^b f(x)\,dx \qquad k = -1$
Sum and Difference	$\int_a^b f(x) \pm g(x)\,dx = \int_a^b f(x)\,dx \pm \int_a^b g(x)\,dx$

Quotient Rule

Product Rule

Given

$\int_2^9 g(x)\,dx = -8$

$\int_2^4 f(x)\,dx = 7$

$\int_2^9 f(x)\,dx = -2$

Find

$\int_2^9 4f(x)\,dx$ $= 4\int_2^9 f(x)\,dx = 4(-2) = -8$

$\int_9^2 g(x)\,dx$ $= -\int_2^9 g(x)\,dx = -(-8) = 8$

$\int_2^9 f(x) - g(x)\,dx$ $= \int_2^9 f(x)\,dx - \int_2^9 g(x)\,dx = -2-(-8) = 6$

$\int_4^9 f(x)\,dx$

$\int_2^4 f(x)\,dx + \int_4^9 f(x)\,dx = \int_2^9 f(x)\,dx$

$7 + \int_4^9 f(x)\,dx = -2$

$-7 \qquad\qquad -7$

$\int_4^9 f(x)\,dx = -9$