

Anti-derivative
5.10.16
L34

Warm-up
Find the derivative

- 1) x^3
- 2) $3x^4 + 2x$
- 3) $\frac{1}{2}x^3 - \frac{1}{4}x^2 + 6x$

Anti-derivatives is going in the reverse order..

Antiderivative Rules	Power Rule:	If $f(x) = x^n$, where n is a rational number other than -1 , the antiderivative is $F(x) = \frac{1}{n+1}x^{n+1} + C$.
	Constant Multiple of a Power Rule:	If $f(x) = kx^n$, where n is a rational number other than -1 and k is a constant, the antiderivative is $F(x) = k \cdot \frac{1}{n+1}x^{n+1} + C$.
	Sum and Difference Rule:	If the antiderivatives of $f(x)$ and $g(x)$ are $F(x)$ and $G(x)$, respectively, then the antiderivative of $f(x) \pm g(x)$ is $F(x) \pm G(x)$.

I Try:
 $f(x) = 3x^7$

Constant multiple of a power	$3 \cdot \frac{1}{7+1}x^{7+1} + C$
Simplify	$\frac{3}{8}x^8 + C$

We Try:

$$4x^2 - 7x + 5$$

Rewrite with variables and exponents	$4x^2 - 7x^1 + 5x^0$
Find the anti-derivative for each part.	$4 \cdot \frac{1}{2+1} x^{2+1} - 7 \cdot \frac{1}{1+1} x^{1+1} +$ $5 \cdot \frac{1}{0+1} x^{0+1}$
Simplify and combine	$\frac{4}{3}x^3 - \frac{7}{2}x^2 + 5x^1 + C$

You Try:

$$x(x^2 + 3)$$

Foil/Distribute First. Then solve!