

AP Calculus  
Worksheet #24

**Examples:**

<b>1</b>	$\int \frac{3x^2 - x}{x^2} dx = \int \frac{3x^2}{x^2} - \frac{x}{x^2} = \int 3dx - \int \frac{1}{x} dx \Rightarrow \boxed{3x - \ln x  + c}$
<b>2</b>	$\int \frac{4x^3 + 5x^2 - 3x + 2}{2x + 3} = \int (2x + 3) \sqrt[4]{4x^3 + 5x^2 - 3x + 2} \Rightarrow (2x + 3) \left( \frac{2x^2 - \frac{1}{2}x - \frac{3}{4} + \frac{17}{4}}{4x^3 + 5x^2 - 3x + 2} \right) \Rightarrow$ $\int 2x^2 - \frac{1}{2}x - \frac{3}{4} + \frac{17}{2x + 3} = \boxed{\frac{2x^3}{3} - x^2 - \frac{3}{4}x + \frac{17}{8} \ln 2x + 3  + c}$

**Problems**

<b>1.</b> $\int \frac{x}{x+1} dx$	<b>2.</b> $\int \frac{2x^3}{x^2-1} dx$
<b>3.</b> $\int \frac{1 + \sin x}{\cos^2 x} dx$	<b>4.</b> $\int \frac{2\theta^3 - 7\theta^2 + 7\theta}{2\theta - 5} d\theta$
<b>5.</b> $\int 3x\sqrt{2x^2 + 1} dx$	<b>6.</b> $\int \frac{x^2 - 2x + 3}{x^2} dx$
<b>7.</b> $\int \frac{2x^2 + 1}{x-1} dx$	<b>8.</b> $\int \frac{dv}{v \ln v}$
<b>9.</b> $\int \tan(2x - 7) dx$	

**Answers:**

1. $x - \ln x+1  + c$	2. $x^2 + \ln x^2 - 1  + C$	3. $\tan x + \sec x + C$
4. $\frac{\theta^3}{3} - \frac{\theta^2}{2} + \theta + \frac{5}{2} \ln 2\theta - 5  + C$	5. $\frac{1}{2} (2x^2 + 1)^{3/2} + c$	6. $x - 2 \ln x  - \frac{3}{x} + C$
7. $x^2 + 2x + 3 \ln x-1  + C$	8. $\ln(\ln v) + c$	9. $\frac{-1}{2} \ln \cos(2x - 7)  + C$