

AP Calculus AB '20-21  
Anti-Derivative FRQ Test v2

Name \_\_\_\_\_

1. 
$$\int \left( 4x^7 + 3^x - \frac{1}{\sqrt[4]{x^7}} + \frac{1}{9x^2} \right) dx$$

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2. 
$$\int \frac{2x^3}{(3+x^4)^{11}} dx$$

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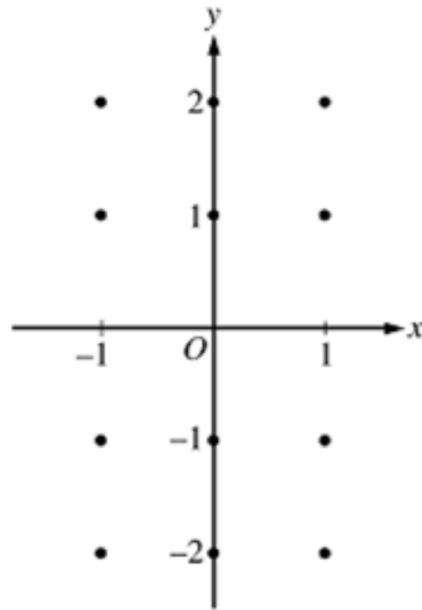
3. A particle's acceleration is given by  $a(t) = 12t + 42$  meters per second squared. At time  $t = 1$ , the particle's velocity is 3 meters per second and its position is 2 meters. Find the particle's position equation.

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4. 
$$\int \left( 3\sqrt{x} - \tan(2x) + \frac{x}{e^{3x^2}} \right) dx$$

5. Given the differential equation,  $\frac{dy}{dx} = \frac{x+1}{y}$

a. On the axis system provided, sketch the slope field for the  $\frac{dy}{dx}$  at all points plotted on the graph.



b. Find the particular solution to  $\frac{dy}{dx} = \frac{x+1}{y}$  with the initial condition  $y(0) = -2$ .