$$52x-7x^3+9+\frac{6}{2}$$
 dx

$$\int \frac{2x^2 - 7x^3 + 9x + 8}{x} dx = \frac{3}{3} + 9x + 8 \ln|x| + C$$

$$\frac{A+B}{C} = \frac{A}{C} + \frac{B}{C}$$

$$9x^{0} \rightarrow 9x^{1}$$

Evaluate the integral and check your answer by differentiating.

$$\int \left(6+3y^2\right)^2 dy = \boxed{ + C}$$

$$\int 8\sqrt{x} + \frac{5}{\sqrt{x}} dx = \frac{\frac{3}{2}}{\frac{16}{3}} \times \frac{1}{10} \times \frac{1}{2} + C.$$

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whenever the letter that follows the d in the integral DOES NOT MATCH everything being fed into some function (power, trig)

This is a multi-part problem. If
$$F(x)=e^{-x}+\frac{1}{e^{3x}}$$
, find $F'(x)$.

$$F'(x) = e^{-x}(-1) + e^{-3x}(-3)$$

$$= -e^{-X} - 3e^{-3X}$$

$$\int \! \left(-rac{1}{e^x} - 3e^{-3x}
ight) dx =$$

$$\int -e^{-x} - 3e^{-3x} dx = -\int e^{-x} dx - 3\int e^{-3x} dx$$

$$\int u = -3 + \int u = -$$

Review of inverse trig derivatives and anti-derivatives

$$f(x) = \sec^{-1}(x)$$

$$p(x) = \frac{\sin^{2}(y)}{\cos^{2}(y)} + \frac{\cos^{2}(y)}{\cos^{2}(y)} = \frac{1}{\cos^{2}(y)}$$
what is
$$f'(x) ?$$

$$et y = \sec^{-1}(x)$$

$$tan^{2}(y) + 1 = \sec^{-2}(y)$$

$$tan^{2}(y) = \sec^{-2}(y) - 1$$

$$sec(y) = x$$

$$tan(y) = \sqrt{\sec^{-2}(y)} - 1$$

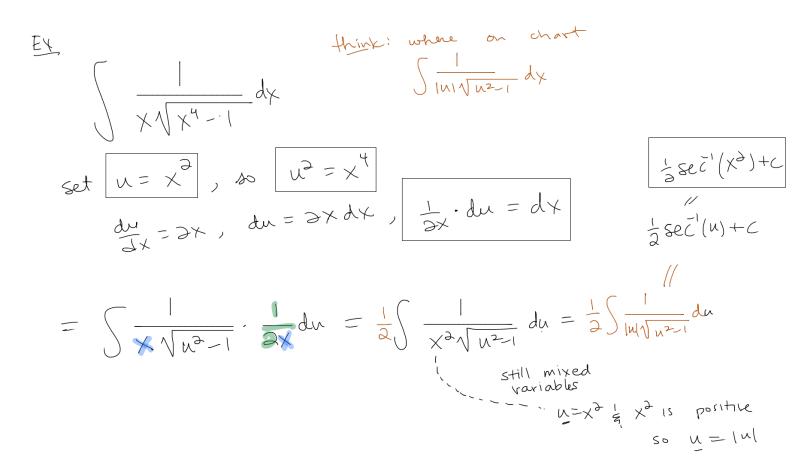
$$se((y) = x)$$

$$tan(y) = \sqrt{\sec^{-2}(y)} - 1$$

$$tan(y) = \sqrt{\sec^{-2}(y)} - 1$$

implizit $\frac{1}{4x}(\sec(y)) = \frac{1}{4x}(x)$ so $y' = \frac{1}{\sec(y) + \arcsin(y)} = \frac{1}{|x|\sqrt{x^2-1}}$ sec(y) $\tan(y)$, y' = 1

 $\int \frac{1}{|x|\sqrt{x^2-1}} dx = \sec^{-1}(x) + C$



$$1. \int \frac{5}{\sqrt{1-x^2}} dx = 5 \sin^{-1}(\chi) + C$$

No derv. relation

$$2. \int \frac{x}{\sqrt{1-x^2}} dx =$$

$$e^{s^{\text{lentially}}}$$

$$u = (-x^2)$$

$$3. \int \frac{4x^3}{\sqrt{1-x^4}} \, dx = \int \frac{dv}{\sqrt{u}} = \int u + u + u = -3 \left(1 - x^4\right) + c$$

$$4. \int \frac{4x}{\sqrt{1-x^4}} dx = \frac{1}{\sqrt{1-x^4}} \left(1-x^4\right) = -4x^3$$
NO derivative relationship