AP Calculus AB

Practice for The Fundamental Theorem of Calculus Exam

Find the general indefinite integral for the following.

1. $\int (\cos x - 2\sin x) \, dx$

 $2. \int x(1+2x^4) dx$

2.
$$\int x(1+2x^4) dx$$

$$= \int (x+2x^5) dx = \left[\frac{x^2}{2} + 4xy + \frac{x^6}{3} + C\right]$$
3. $\int (x^2+1+\frac{1}{x^2+1}) dx$

$$= \left[\frac{x^3}{3} + x + \tan^3 x + C\right]$$

Use Part 1 of the Fundamental Theorem of Calculus to find the derivative for the following.

4.
$$h(x) = \int_1^x t^2 \sin t \, dt \qquad (\chi^2)$$

5.
$$F(x) = \int_{x}^{5} \tan \theta \, d\theta$$
 = -\int_{5}^{1x} \tan \theta \, \theta \in \text{tan } \theta \, \theta \in \text{tan } \text{ \text{tan } \text{ }

6. $y = \int_{e^{2x}}^{0} \sin^3 t \, dt$

$$= - \int_{0}^{e^{2\pi}} \sin^{3} t \, dt = \int_{0}^{e^{2\pi}} \int_{0}^{e^{2\pi}} dt \, dt = \int_{0}^{e^{$$

Use Part 2 of the Fundamental Theorem of Calculus to evaluate the integral.

$$7. \int_0^1 x^2 dx$$

$$F(x) = \frac{x^3}{3}$$

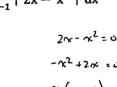
7.
$$\int_0^1 x^2 dx \qquad F(x) = \frac{x^3}{3} \qquad \sharp \left(i \right) - \sharp \left(o \right) \qquad \left(\frac{1}{3} \right)$$

8. $\int_{-4}^{2} \frac{2}{x^6} dx$ with the first of the start of the start

9.
$$\int_{-e^2}^{-e} \frac{3}{x} dx$$

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 $3x^{-1} + (x) = 3\ln|x|$ $+ (-c^2) = (-3)$

10. $\int_{-1}^{3} |2x - x^2| dx$



$$\int_{-1}^{0} \left(-2x + x^{2}\right) dx + \int_{0}^{2} \left(2x - x^{2}\right) dx + \int_{2}^{3} \left(-2x + x^{2}\right) dx$$