

Name Ethan Gonzalez Cervantes I.D. 101570# Date: 13/Feb/2018

I. Determine if the following propositions are True (T) or False(F) (5 points each):

1. (F) Having $\int (\sin x + \cos x) dx$ is the same as having $\int (\sin x) dx + \int (\cos x) dx$
2. (F) The answer for $\int 6 \frac{\csc(3x)}{\sin(3x)} dx$ is $-2 \cot(3x) + C$ \int
 $u = 3x \quad du = 3$
3. (F) $\int x(x^2 + 3)^2 dx = \frac{1}{6}(x^2 + 3)^3 + C$ $u = x^2 + 3 \quad du = 2x$ $\frac{1}{2}$
4. (F) $\int (x^2 - 3) \tan(x^2 - 3x) dx = -\ln|\cos(x^2 - 3x)| + C$
5. (F) The integral of $\int (2 \sin 3x + 3x) dx$ is $-6 \sin 3x + 3 + C$
 $u = 3x + 3x \quad du = 6$

II. Solve the following exercises, show ALL your procedure and frame your final answer. (15 points each).

If the equation of acceleration of an object is $a(t) = \frac{3}{t-4}$ and the velocity at $t=5$, is 8 m/s, then find the equation that determines the velocity of the object at any time 't'.

$$v(t) = \frac{3(t-4)^2}{2} + 5.75$$

$$= 29.75$$

$$3 \ln |t-4| + C$$

$$v = t-4$$

$$d = 1$$

$$v(t) = \frac{3(t-4)^2}{2}$$

$$v(5) = 8 = \frac{3(5-4)^2}{2} = 8 - 2.25$$

$$= 5.75$$

$$v(t) = \frac{3(t-4)^2}{2} + 5.75$$

III. Find the antiderivative or integral of the following problems. SHOW YOUR ENTIRE PROCEDURE. (15 pts each)

1- $h(x) = 96 \sin^2(2x + \pi) \cos(2x + \pi)$

$$u = 2x + \pi$$

$$du = 2$$

$$\frac{48 \sin^2(2x + \pi)}{2}$$

$$= \frac{16 \sin^2(2x + \pi)}{2} + C$$

15