```
(* Quiz 32 | AP BC | A Period *)

(* Problem 1 *)
```

In[1]:=
```
Integrate[x Sqrt[4 - x], {x, -5, 0}]
```

Out[1]= $-\frac{506}{15}$

Start with : u = 4 - x

In[2]:=
```
Integrate[1 / (4 + 9 x^2), {x, 0, 2 / Sqrt[3]}]
```

Out[2]= $\frac{\pi}{18}$

Start with u = 3 x / 2.

```
(* Problem 2 *)
```

Please see class notes. Read the discussion of FTC in your textbook.

```
(* Problem 3 *)
```

In[3]:=
```
Integrate[t / 7, {t, 0, 14}]
```

Out[3]= 14

By the net change theorem we have : R (14) - R (0) = 14 and R (0) = 10, so we have R (14) = 24 grams.

```
(* Quiz 32 | AP BC | F Period *)

(* Problem 1 *)
```

In[4]:=
```
Integrate[1 / Sqrt[3 x + 1], {x, 0, 1}]
```

Out[4]= $\frac{2}{3}$

Start with : u = 3 x + 1

In[5]:=
```
Integrate[1 / (x Log[x]), {x, E, E^2}]
```

Out[5]= Log[2]

Start with u = ln(x). Note that in *Mathematica* Log means Natural Log (i.e. the final answer above is ln(2).)

```
(* Problem 2 *)
```

Differentiate both sides to get f(x) = 3 e^(3x). In this step you applied FTC part 1.
Use FTC part 2 to get e^(3x) - e^(3a) = e^(3x) - 2 .... solve, to get: a = (ln 2) / 3.

```
(* Problem 3 *)
```

In[3]:=
```
Integrate[t / 7, {t, 0, 14}]
```

Out[3]= 14

By the net change theorem we have : R (14) - R (0) = 14 and R (0) = 10, so we have R (14) = 24

grams.