## Theory

## LIGO-GW150914 (10 points)

## Part A: Newtonian (conservative) orbits (3.0 points)

A. 1 ( 1.0 pt )
$n=$
$\alpha=$

$$
\begin{aligned}
& \text { A. } 2(1.0 \mathrm{pt}) \\
& A(\mu, \Omega, L)=
\end{aligned}
$$

```
A.3 (1.0 pt)
\beta=
```

Part B: Introducing relativistic dissipation (7.0 points)

| $\mathbf{B . 1}(1.0 \mathrm{pt})$ |  |  |
| :--- | :--- | :--- |
| $k=$ |  |  |
| $a_{1}=$ | $a_{2}=$ | $a_{3}=$ |
| $b_{1}=$ | $b_{2}=$ | $b_{3}=$ |
| $c_{12}=$ | $c_{13}=$ | $c_{23}=$ |
| $c_{21}=$ | $c_{22}=$ | $c_{23}=$ |
| $c_{31}=$ | $c_{32}=$ | $c_{33}=$ |

```
B. 2 (1.0 pt)
\(\xi=\)
```

$$
\begin{aligned}
& \mathbf{B .} 3(1.0 \mathrm{pt}) \\
& M_{\mathrm{c}}=
\end{aligned}
$$

## Theory

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B. 4 (2.0 pt)
\(p=\)
```

B. 5 ( 1.0 pt )
$M_{\mathrm{c}} \simeq \quad M \simeq$
B. 6 ( 1.0 pt )
$L \simeq$
$\frac{R_{\odot}}{R_{\text {max }}} \simeq$
$\frac{v_{\text {col }}}{c} \simeq$

