It's worth noting that whitespace does not matter in lambda calculus; the body of lambda abstractions extend as far right as possible regardless of spacing. For example, the lambda abstraction $(\lambda x.x\ y\ z\ a)$ has a body from x to a.

1. $(\lambda x.x)\ y \xrightarrow{\beta} y$

2. $(\lambda x.y)\ x \xrightarrow{\beta} y$

3. $(\lambda x.x\ y)\ (\lambda y.y\ z) \xrightarrow{\beta} (\lambda y.y\ z)y \xrightarrow{\beta} y\ z$

4. $(\lambda x.x\ y)\ (\lambda a.a\ b)\ p \xrightarrow{\beta} ((\lambda a.a\ b)y)p \xrightarrow{\beta} (y\ b)\ p = y\ b\ p$

5. $(\lambda x.x\ y)\ (\lambda a.b\ a)\ p \xrightarrow{\beta} ((\lambda a.b\ a)y)p \xrightarrow{\beta} (b\ y)\ p = b\ y\ p$

6. $(\lambda x.(\lambda y.x\ y))\ y \xrightarrow{\alpha} (\lambda x.(\lambda a.x\ a))\ y \xrightarrow{\beta} (\lambda a.y\ a)$

7. $(\lambda x.y\ x)\ y \xrightarrow{\beta} y\ y$

8. $(\lambda x.\lambda y.x\ y\ z)\ (\lambda x.x\ y)\ z \xrightarrow{\alpha} (\lambda x.\lambda a.x\ a\ z)\ (\lambda x.x\ y)\ z \xrightarrow{\beta} (\lambda a.(\lambda x.x\ y)\ a\ z)\ z$
$\xrightarrow{\beta} ((\lambda x.x\ y)\ z\ z) \xrightarrow{\beta} (z\ y)\ z = z\ y\ z$

9. $(\lambda x.y\ x)\ x \xrightarrow{\beta} y\ x$

10. $(\lambda y.y\ x)\ (\lambda z.z\ y) \xrightarrow{\beta} (\lambda z.z\ y)x \xrightarrow{\beta} x\ y$