Задание:

1. $(\exists x)(\phi \wedge \psi) \ \vdash \ (\exists x)\phi \wedge \psi$
2. $\vdash \ t \approx t$

Решение:

1. В следствии правила сободной конкретизации: достаточно доказать для переменных.
   $\vdash \ x \approx x$
   Аксиома.

2.

$$\dfrac{\dfrac{\dfrac{\dfrac{\phi \wedge \psi \ \vdash \ \phi \wedge \psi}{\phi \wedge \psi \ \vdash \ \phi}\,(\text{удал. } \wedge)}{\phi \wedge \psi \ \vdash \ (\exists x)\phi}\,(\text{введ. } \exists \text{ справа}) \quad \dfrac{\dfrac{\phi \wedge \psi \ \vdash \ \phi \wedge \psi}{\phi \wedge \psi \ \vdash \ \psi}\,(\text{удал. } \wedge)}{\phi \wedge \psi \ \vdash \ (\exists x)\psi}\,(\text{введ. } \exists \text{ справа})}{\phi \wedge \psi \ \vdash \ (\exists x)\phi \wedge (\exists x)\psi}\,(\text{введ. } \wedge)}{(\exists x)(\phi \wedge \psi) \ \vdash \ (\exists x)\phi \wedge (\exists x)\psi}\,(\exists \text{ введ. слева})$$