Here are some more simple practice derivations. Do not use any theorems:

1. From $\Gamma \vdash p$ to $\Gamma \vdash q \supset p$ (Hint: you can add anything you want to the datum of a sequent).

1. Γ	$\vdash p$	. . . . premise
2. Γ, q	$\vdash p$	 1
3. Γ	$\vdash q \supset p$	. . . . 2,$\supset$I

2. From $\Gamma \vdash r$ and $\Delta \vdash \neg r$ to $\Gamma, \Delta \vdash s$ (Hint: you can add anything you want to the datum of a sequent).

1. Γ	$\vdash r$	. . . . premise
2. Δ	$\vdash \neg r$	. . . . premise
3. $\Gamma, \neg s$	$\vdash r$	 1
4. $\Gamma, \neg s$	$\vdash \neg r$	 2
5. Γ	$\vdash \neg\neg s$	. . . . 3,4,$\neg$I
6. Γ	$\vdash s$	. . . . 5,$\neg$E

3. From $\Gamma \vdash s$ to $\Gamma \vdash \neg\neg s$ (Hint: assume $\neg s$) .

1. Γ	$\vdash s$	. . . . premise
2. $\neg s$	$\vdash \neg s$	. . . . A
3. $\Gamma, \neg s$	$\vdash s$	 1
4. Γ	$\vdash \neg\neg s$	. . . . 2,3,$\neg$I

4. From $\Gamma \vdash \neg\neg p \supset q$ to $\Gamma \vdash p \supset q$ (Hint: part of the derivation adapts the previous one).

1. Γ	$\vdash \neg\neg p \supset q$	. . . . premise
2. p	$\vdash p$	. . . . A
3. $\neg p$	$\vdash \neg p$	. . . . A
4. $p, \neg p$	$\vdash p$	 2
5. p	$\vdash \neg\neg p$	. . . . 3,4,$\neg$I
6. Γ, p	$\vdash q$	. . . . 1,5,$\supset$E
7. Γ	$\vdash p \supset q$	. . . . 6,$\supset$I

5. From $\Gamma \vdash \neg\neg p \supset \neg\neg q$ to $\Gamma \vdash p \supset q$ (Hint: adapt the previous two derivations).

1. Γ	$\vdash \neg\neg p \supset \neg\neg q$	. . . . premise
2. p	$\vdash p$	. . . . A
3. $\neg p$	$\vdash \neg p$	. . . . A
4. $p, \neg p$	$\vdash p$	 2
5. p	$\vdash \neg\neg p$	. . . . 3,4,¬I
6. Γ, p	$\vdash \neg\neg q$	. . . . 1,5,⊃E
7. Γ, p	$\vdash q$	. . . . 6,¬E
8. Γ	$\vdash p \supset q$	. . . . 7,⊃I

6. From $\Gamma \vdash \neg\neg s \vee w$ to $\Gamma \vdash s \vee w$ (Hint: ∨E is your friend and don't forget about ∨I).

1. Γ	$\vdash \neg\neg s \vee w$	. . . . premise
2. $\neg\neg s$	$\vdash \neg\neg s$	. . . . A
3. $\neg\neg s$	$\vdash s$	. . . . 2,¬E
4. $\neg\neg s$	$\vdash s \vee w$	. . . . 3,∨I
5. w	$\vdash w$	. . . . A
6. w	$\vdash s \vee w$	. . . . 5,∨I
7. Γ	$\vdash s \vee w$	. . . . 1,4,6,∨E

7. From $\Gamma \vdash p \wedge (q \wedge r)$ to $\Gamma \vdash (p \wedge r) \wedge q$ (Hint: you only need $\wedge$E and $\wedge$I).

1. Γ	$\vdash p \wedge (q \wedge r)$	. . . . premise
2. Γ	$\vdash p$	. . . . 1,$\wedge$E
3. Γ	$\vdash q \wedge r$	. . . . 1,$\wedge$E
4. Γ	$\vdash r$	. . . . 3,$\wedge$E
5. Γ	$\vdash p \wedge r$	. . . . 2,4,$\wedge$I
6. Γ	$\vdash q$	. . . . 3,$\wedge$E
7. Γ	$\vdash (p \wedge r) \wedge q$	. . . . 5,6,$\wedge$I

8. From $\Gamma \vdash (p \vee q) \vee r$ to $\Gamma \vdash q \vee (p \vee r)$ (Hint: apart from assumptions, you only need $\vee$I and $\vee$E).

1. Γ	$\vdash (p \vee q) \vee r$	. . . . premise
2. $p \vee q$	$\vdash p \vee q$	. . . . A
3. p	$\vdash p$	. . . . A
4. p	$\vdash p \vee r$	. . . . 3,$\vee$I
5. p	$\vdash q \vee (p \vee r)$	. . . . 4,$\vee$I
6. q	$\vdash q$	. . . . A
7. q	$\vdash q \vee (p \vee r)$	. . . . 6,$\vee$I
8. $p \vee q$	$\vdash q \vee (p \vee r)$	. . . . 2,5,7,$\vee$E
9. r	$\vdash r$	. . . . A
10. r	$\vdash p \vee r$	. . . . 9,$\vee$I
11. r	$\vdash q \vee (p \vee r)$	. . . . 10,$\vee$I
12. Γ	$\vdash q \vee (p \vee r)$	. . . . 1,8,11,$\vee$E