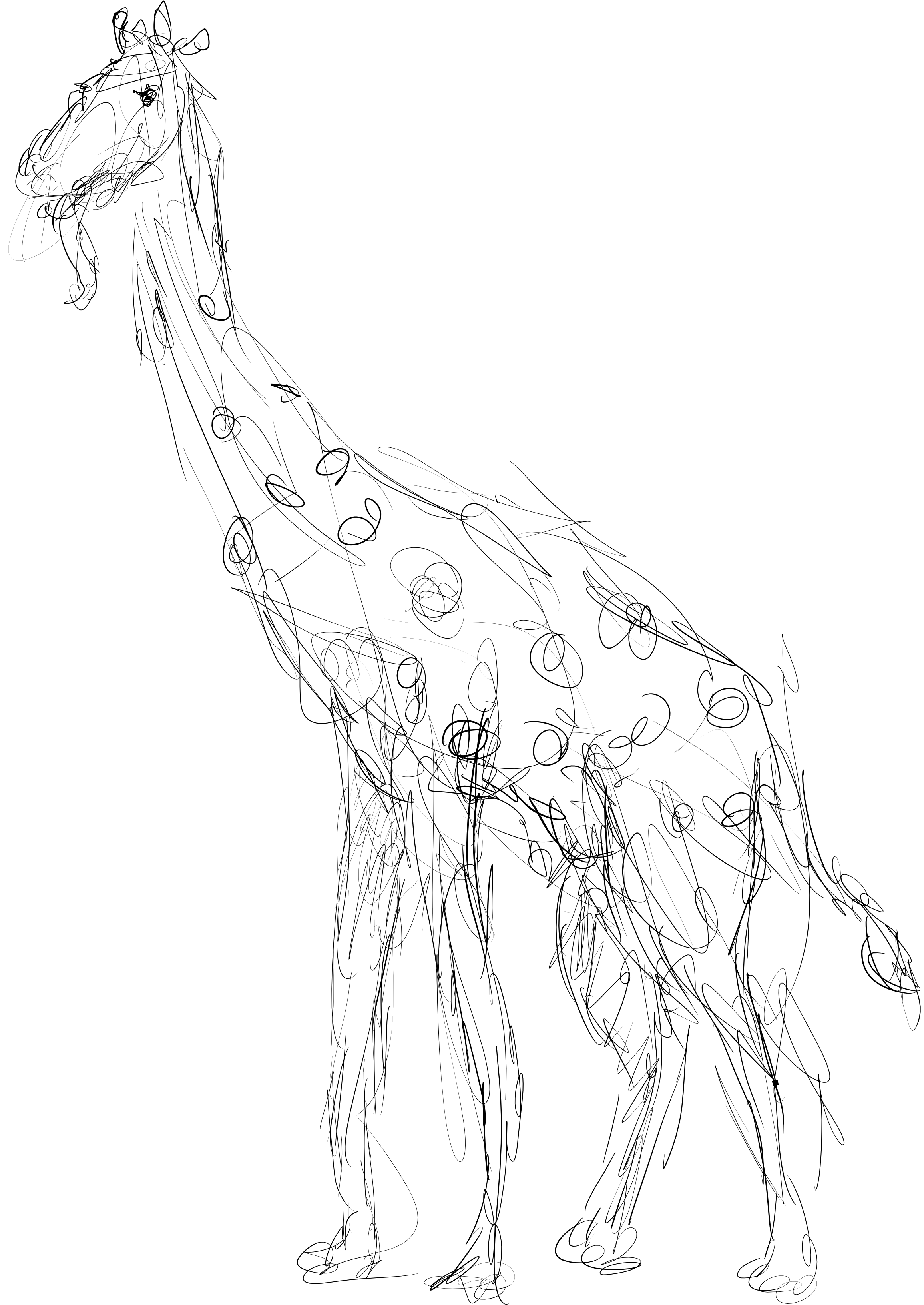

$\boxed{A \to B} \equiv (A \wedge B) \vee (\neg A \wedge B) \vee \underbrace{(\neg A \wedge \neg B)}$

↓ defn of →

$\neg A \vee B$

↓ dub neg

$\neg A \vee \neg\neg B$

↓ De Morgan

$\neg(A \wedge \neg B)$

↓ demorgan

$(A \wedge B) \vee (\neg A \wedge B) \vee \neg(A \vee B)$

→ demorgan distributive

comm assiative

↓ commutative ∨

$(A \wedge B) \vee \neg(A \vee B) \vee (\neg A \wedge B)$

↓ defn in

$(A \wedge B) \vee ((A \vee B) \to (\neg A \wedge B))$

$$(A \land B)$$

$$\neg\neg(A \land B)$$

$$\neg(\neg A \lor \neg B)$$

$$(\neg\neg A \land B)$$

$$(\neg\neg A \land \neg\neg B)$$

$$\neg(\neg A \lor \neg B)$$

[redacted]

$$(A \wedge B) \vee (\neg A \wedge B) \vee (\neg A \wedge \neg B)$$

[redacted]

&

distribute

[redacted]

$$(A \wedge B) \vee \left(\overset{A}{\boxed{\neg A}} \wedge \left(\overset{B}{\boxed{B}} \vee \overset{C}{\boxed{\neg B}}\right)\right)$$

$$\underbrace{B \vee \neg B}_{T}$$

$$(A \wedge B) \vee (\neg A \wedge T)$$

$$(A \wedge B) \vee \neg A$$

$$(A \vee \neg A) \wedge (B \vee \neg A)$$

$$T \wedge (B \vee \neg A)$$

$$B \vee \neg A$$

$$\neg A \vee B$$

$$A \to B$$

$A \to B$	Given
$\neg A \vee B$	def of imp
$B \vee \neg A$	commutative $\vee$
$T \wedge (B \vee \neg A)$	simplification (Backwards)
$(A \vee \neg A) \wedge (B \vee \neg A)$	$\wedge$ introduction
	unsimplify
$(\neg A \vee A) \wedge (B \vee \neg A)$	
$(\neg A \vee A) \wedge (\neg A \vee B)$	
$\neg A \vee (A \wedge B)$	