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Value Iteration

In each of the paths, arrows represent which direction the agent chooses to move.

Case I: No Wind

i. Value Function

-6	-5	-4	-3	-3	-3	-3
-6	-5	-4	-3	-2	-2	-2
-6	-5	-4	-3	-2	-1	-1
-6	-5	-4	-3	-2	-1	0
-6	-5	-4	-3	-2	-1	-1
-6	-5	-4	-3	-2	-2	-2
-6	-5	-4	-3	-3	-3	-3

ii. Following the optimal policy from (3, 0)

One path to follow is: (3,0) → (3, 1) → (3, 2) → (3,3) → (3,4) → (3,5) → (3,6)

Another possible path to follow is: (3,0) ↗ (2, 1) → (2, 2) ↘ (3,3) → (3,4) → (3,5) → (3,6)

Case II: Light Wind

i. Value Function

-6	-6	-6	-6	-5	-4	-3
-6	-5	-5	-5	-4	-3	-2
-6	-5	-4	-4	-3	-2	-1
-6	-5	-4	-3	-2	-1	0
-6	-5	-4	-3	-2	-1	-1
-6	-5	-4	-3	-2	-1	-2
-6	-5	-4	-3	-2	-2	-2

ii. Following the optimal policy from (3, 0)

One path to follow is: (3,0) → (3, 1) → (3, 2) → (3,3) ↘ (3,4) ↘ (3,5) ↘ (3,6)

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Another possible path to follow is: (3,0) ↘ (4, 1) → (4, 2) → (4,3) ↘ (4,4) → (3,5) ↘ (3,6)

Case III: Strong Wind

i. Value Function

-9	-8	-7	-6	-5	-4	-3
-8	-8	-7	-6	-5	-4	-2
-7	-7	-7	-6	-5	-3	-1
-6	-6	-6	-6	-4	-2	0
-6	-5	-5	-5	-3	-1	-1
-6	-5	-4	-4	-2	-1	-2
-6	-5	-4	-3	-2	-1	-2

ii. Following the optimal policy from (3, 0)

One path to follow is: (3, 0) ↘ (4, 1) ↘ (5, 2) ↘ (6, 3) ↘ (5, 4) ↘ (4, 5) ↘ (3, 6)

This is the only possible path following the optimal policy