```mermaid
flowchart TD
    start([int trapezoid_type(int a, int b, int c, int d)])
    s1[type=0]
    s2[h=0]
    d4{a==b}
    s4[type=type-1]
    d6{(a<=0) || (b<=0)<br/>predicate 6}
    s6[type=type-1]
    d8{(c<=0) || (d<=0)<br/>predicate 8}
    s8[type=type-1]
    d10{type>=0}
    d11{a!=b}
    s11[h=sqrt((-a+b+c+d)*(a-b+c+d)*(a-b+c-d)*(a-b-c+d))/(2*abs(b-a))]
    d13{h*h>0}
    s13[type=type+1]
    d15{(c==h) || (d==h)<br/>predicate 15}
    s15[type=type+3]
    d17{c==d}
    s17[type=type+2]
    d19{type!=3}
    d20{(a!=c)&&(a!=d)<br/>predicate 20}
    d21{(b!=c)&&(b!=d)<br/>predicate 21}
    s21[type=type+1]
    ret([return type])

    start --> s1 --> s2 --> d4
    d4 -- 4T --> s4
    d4 -- 4F --> d6
    s4 --> d6
    d6 -- 6T --> s6
    d6 -- 6F --> d8
    s6 --> d8
    d8 -- 8T --> s8
    d8 -- 8F --> d10
    s8 --> d10
    d10 -- 10T --> d11
    d10 -- 10F --> ret
    d11 -- 11T --> s11
    d11 -- 11F --> d13
    s11 --> d13
    d13 -- 13T --> s13
    d13 -- 13F --> ret
    s13 --> d15
    d15 -- 15T --> s15
    d15 -- 15F --> d17
    s15 --> d17
    d17 -- 17T --> s17
    d17 -- 17F --> d19
    s17 --> d19
    d19 -- 19T --> d20
    d19 -- 19F --> ret
    d20 -- 20T --> d21
    d20 -- 20F --> ret
    d21 -- 21T --> s21
    d21 -- 21F --> ret
    s21 --> ret
```

Branch Testing

	a	b	c	d	Covered Branches
Test Case #1	12	12	13	14	**4T**, **6F**, **8F**, **10F**
Test Case #2	0	0	0	0	4T, **6T**, **8T**, 10F
Test Case #3	9	14	12	13	**4F**, 6F, 8F, **10T**, **11T**, **13T**, **15T**, **17F**, **19T**, **20T**, **21T**
Test Case #4	12	4	1	2	4F, 6F, 8F, 10T, 11T, **13F**
Test Case #5	5	11	5	5	4F, 6F, 8F, 10T, 11T, 13T, **15F**, **17T**, **19F**
Test Case #6	29	77	29	35	4F, 6F, 8F, 10T, 11T, 13T, 15F, 17F, 19T, **20F**, 21T
Test Case #7	77	29	35	29	4F, 6F, 8F, 10T, 11T, 13T, 15F, 17F, 19T, 20T, **21F**

11F is not executable.

Coverage = (21/22) x 100 = 95.45%

Multiple-Condition testing

Predicate 6

a<=0	b<=0	Test Case	a	b	c	d
F	F	Covered in Test Case #1				
F	T	Test Case #8	12	0	13	14
T	F	Test Case #9	0	12	13	14
T	T	Covered in Test Case #2				

Predicate 8

c<=0	d<=0	Test Case	a	b	c	d
F	F	Covered in Test Case #1				
F	T	Test Case #10	12	13	14	0
T	F	Test Case #11	12	13	0	14
T	T	Covered in Test Case #2				

Predicate 15

c==h	d==h	Test Case	a	b	c	d
F	F	Covered in Test Case #5				
F	T	Test Case #12	9	14	13	12
T	F	Covered in Test Case #3				
T	T	No test case				

Predicate 20

a!=c	a!=d	Test Case	a	b	c	d
F	F	No test case				
F	T	Covered in Test Case #6				
T	F	Test Case #13	29	77	35	29
T	T	Covered in Test Case #3				

Predicate 21

b!=c	b!=d	Test Case	a	b	c	d
F	F	No test case				
F	T	Test Case #14	77	29	29	35
T	F	Test Case #15	77	29	35	29
T	T	Covered in Test Case #3				