

## One Variable Expressions

**Procedure 1.** Assume the slide is in its default position and aligned with the body. Move the hairline above a number  $u$  on scale 1, and read the result  $F(u)$  underneath the hairline on scale 2.

In each row of this Table,  $m$  is the number of the row,  $n$  is the number of the distinct expression being evaluated, and  $k$  is number of the pair of scales being used for that expression.  $F(u)$  is the expression that is being evaluated. The last two columns list the scales used to compute  $F(u)$ .  $\log(u)$  is the common (base 10) logarithm of  $u$ ,  $\text{Exp}(u) = 10^u$

$m$	$n$	$k$	$F(u)$	$S_1$	$S_2$
1	1	1	$u$	CD	CD
2	1	2	$u$	CDI	CDI
3	1	3	$u$	CDF	CDF
4	1	4	$u$	CDIF	CDIF
5	1	5	$u$	AB	AB
6	1	6	$u$	R	R
7	1	7	$u$	K	K
8	1	8	$u$	LL	LL
9	1	9	$u$	L	L
10	1	10	$u$	S	S
11	1	11	$u$	T	T
12	1	12	$u$	P	P
13	1	13	$u$	H	H
14	2	1	$u^{-1}$	CD	CDI
15	2	2	$u^{-1}$	CDI	CD
16	2	3	$u^{-1}$	CDF	CDIF
17	2	4	$u^{-1}$	CDIF	CDF
18	3	1	$u\pi$	CD	CDF
19	3	2	$u\pi$	CDIF	CDI
20	4	1	$\frac{1}{u\pi}$	CD	CDIF
21	4	2	$\frac{1}{u\pi}$	CDIF	CD
22	5	1	$u^2$	CD	AB
23	5	2	$u^2$	R	CD
24	6	1	$\sqrt{u}$	CD	R

25	6	2	$\sqrt{u}$	AB	CD
26	7	1	$u^3$	CD	K
27	8	1	$e^u$	CD	LL
28	9	1	$\log(u)$	CD	L
29	10	1	$\arcsin(u)$	CD	S
30	11	1	$\arctan(u)$	CD	T
31	12	1	$\sqrt{1-u^2}$	CD	P
32	12	2	$\sqrt{1-u^2}$	P	CD
33	13	1	$\sqrt{1+u^2}$	CD	H
34	14	1	$\frac{\pi}{u}$	CDI	CDF
35	14	2	$\frac{\pi}{u}$	CDF	CDI
36	15	1	$\frac{u}{\pi}$	CDI	CDIF
37	15	2	$\frac{u}{\pi}$	CDF	CD
38	16	1	$u^{-2}$	CDI	AB
39	16	2	$u^{-2}$	R	CDI
40	17	1	$\sqrt{u^{-1}}$	CDI	R
41	18	1	$u^{-3}$	CDI	K
42	19	1	$e^{u^{-1}}$	CDI	LL
43	20	1	$\log(u^{-1})$	CDI	L
44	21	1	$\arcsin(u^{-1})$	CDI	S
45	22	1	$\arctan(u^{-1})$	CDI	T
46	23	1	$\sqrt{\frac{-1+u^2}{u^2}}$	CDI	P
47	24	1	$\sqrt{\frac{1+u^2}{u^2}}$	CDI	H
48	25	1	$\frac{u^2}{\pi^2}$	CDF	AB
49	26	1	$\sqrt{\frac{u}{\pi}}$	CDF	R
50	27	1	$\frac{u^3}{\pi^3}$	CDF	K

51	28	1	$e^{\frac{u}{\pi}}$	CDF	LL
52	29	1	$\log\left(\frac{u}{\pi}\right)$	CDF	L
53	30	1	$\arcsin\left(\frac{u}{\pi}\right)$	CDF	S
54	31	1	$\arctan\left(\frac{u}{\pi}\right)$	CDF	T
55	32	1	$\sqrt{\frac{\pi^2-u^2}{\pi^2}}$	CDF	P
56	33	1	$\sqrt{\frac{\pi^2+u^2}{\pi^2}}$	CDF	H
57	34	1	$\frac{1}{u^2\pi^2}$	CDIF	AB
58	35	1	$\sqrt{\frac{1}{u\pi}}$	CDIF	R
59	36	1	$\frac{1}{u^3\pi^3}$	CDIF	K
60	37	1	$e^{\frac{1}{u\pi}}$	CDIF	LL
61	38	1	$\log\left(\frac{1}{u\pi}\right)$	CDIF	L
62	39	1	$\arcsin\left(\frac{1}{u\pi}\right)$	CDIF	S
63	40	1	$\arctan\left(\frac{1}{u\pi}\right)$	CDIF	T
64	41	1	$\sqrt{\frac{u^2\pi^2-1}{u^2\pi^2}}$	CDIF	P
65	42	1	$\sqrt{\frac{u^2\pi^2+1}{u^2\pi^2}}$	CDIF	H
66	43	1	$\frac{1}{\sqrt{u}}$	AB	CDI
67	44	1	$\sqrt{u\pi}$	AB	CDF
68	45	1	$\frac{1}{\sqrt{u\pi}}$	AB	CDIF
69	46	1	$\sqrt[4]{u}$	AB	R
70	47	1	$u^{3/2}$	AB	K
71	48	1	$e^{\sqrt{u}}$	AB	LL
72	49	1	$\log(\sqrt{u})$	AB	L
73	50	1	$\arcsin(\sqrt{u})$	AB	S
74	51	1	$\arctan(\sqrt{u})$	AB	T

75	52	1	$\sqrt{1-u}$	AB	P
76	53	1	$\sqrt{1+u}$	AB	H
77	54	1	$u^2\pi$	R	CDF
78	55	1	$\frac{1}{u^2\pi}$	R	CDIF
79	56	1	$u^4$	R	AB
80	57	1	$u^6$	R	K
81	58	1	$e^{u^2}$	R	LL
82	59	1	$\log(u^2)$	R	L
83	60	1	$\arcsin(u^2)$	R	S
84	61	1	$\arctan(u^2)$	R	T
85	62	1	$\sqrt{1-u^4}$	R	P
86	63	1	$\sqrt{1+u^4}$	R	H
87	64	1	$\sqrt[3]{u}$	K	CD
88	65	1	$\frac{1}{\sqrt[3]{u}}$	K	CDI
89	66	1	$\sqrt[3]{u}\pi$	K	CDF
90	67	1	$\frac{1}{\sqrt[3]{u}\pi}$	K	CDIF
91	68	1	$u^{2/3}$	K	AB
92	69	1	$\sqrt[6]{u}$	K	R
93	70	1	$e^{\sqrt[3]{u}}$	K	LL
94	71	1	$\log(\sqrt[3]{u})$	K	L
95	72	1	$\arcsin(\sqrt[3]{u})$	K	S
96	73	1	$\arctan(\sqrt[3]{u})$	K	T
97	74	1	$\sqrt{1-u^{2/3}}$	K	P
98	75	1	$\sqrt{1+u^{2/3}}$	K	H
99	76	1	$\ln(u)$	LL	CD
100	77	1	$(\ln(u))^{-1}$	LL	CDI

101	78	1	$\ln(u) \pi$	LL	CDF
102	79	1	$\frac{1}{\ln(u)\pi}$	LL	CDIF
103	80	1	$(\ln(u))^2$	LL	AB
104	81	1	$\sqrt{\ln(u)}$	LL	R
105	82	1	$(\ln(u))^3$	LL	K
106	83	1	$\log(\ln(u))$	LL	L
107	84	1	$\arcsin(\ln(u))$	LL	S
108	85	1	$\arctan(\ln(u))$	LL	T
109	86	1	$\sqrt{1 - (\ln(u))^2}$	LL	P
110	87	1	$\sqrt{1 + (\ln(u))^2}$	LL	H
111	88	1	$\text{Exp}(u)$	L	CD
112	89	1	$(\text{Exp}(u))^{-1}$	L	CDI
113	90	1	$\text{Exp}(u) \pi$	L	CDF
114	91	1	$\frac{1}{\text{Exp}(u)\pi}$	L	CDIF
115	92	1	$(\text{Exp}(u))^2$	L	AB
116	93	1	$\sqrt{\text{Exp}(u)}$	L	R
117	94	1	$(\text{Exp}(u))^3$	L	K
118	95	1	$e^{\text{Exp}(u)}$	L	LL
119	96	1	$\arcsin(\text{Exp}(u))$	L	S
120	97	1	$\arctan(\text{Exp}(u))$	L	T
121	98	1	$\sqrt{1 - (\text{Exp}(u))^2}$	L	P
122	99	1	$\sqrt{1 + (\text{Exp}(u))^2}$	L	H
123	100	1	$\sin(u)$	S	CD
124	101	1	$(\sin(u))^{-1}$	S	CDI

125	102	1	$\sin(u)\pi$	S	CDF
126	103	1	$\frac{1}{\sin(u)\pi}$	S	CDIF
127	104	1	$(\sin(u))^2$	S	AB
128	105	1	$\sqrt{\sin(u)}$	S	R
129	106	1	$(\sin(u))^3$	S	K
130	107	1	$e^{\sin(u)}$	S	LL
131	108	1	$\log(\sin(u))$	S	L
132	109	1	$\arctan(\sin(u))$	S	T
133	110	1	$\cos(u)$	S	P
134	111	1	$\sqrt{2 - (\cos(u))^2}$	S	H
135	112	1	$\tan(u)$	T	CD
136	113	1	$(\tan(u))^{-1}$	T	CDI
137	114	1	$\tan(u)\pi$	T	CDF
138	115	1	$\frac{1}{\tan(u)\pi}$	T	CDIF
139	116	1	$(\tan(u))^2$	T	AB
140	117	1	$\sqrt{\tan(u)}$	T	R
141	118	1	$(\tan(u))^3$	T	K
142	119	1	$e^{\tan(u)}$	T	LL
143	120	1	$\log(\tan(u))$	T	L
144	121	1	$\arcsin(\tan(u))$	T	S
145	122	1	$\sqrt{\frac{2(\cos(u))^2 - 1}{(\cos(u))^2}}$	T	P
146	123	1	$(\cos(u))^{-1}$	T	H
147	124	1	$\frac{1}{\sqrt{1-u^2}}$	P	CDI
148	125	1	$\sqrt{1-u^2}\pi$	P	CDF
149	126	1	$\frac{1}{\sqrt{1-u^2}\pi}$	P	CDIF

150	127	1	$1 - u^2$	P	AB
151	128	1	$\sqrt[4]{1 - u^2}$	P	R
152	129	1	$(1 - u^2)^{3/2}$	P	K
153	130	1	$e^{\sqrt{1-u^2}}$	P	LL
154	131	1	$\log(\sqrt{1 - u^2})$	P	L
155	132	1	$\arcsin(\sqrt{1 - u^2})$	P	S
156	133	1	$\arctan(\sqrt{1 - u^2})$	P	T
157	134	1	$\sqrt{2 - u^2}$	P	H
158	134	2	$\sqrt{2 - u^2}$	H	P
159	135	1	$\sqrt{-1 + u^2}$	H	CD
160	136	1	$\frac{1}{\sqrt{-1+u^2}}$	H	CDI
161	137	1	$\sqrt{-1 + u^2}\pi$	H	CDF
162	138	1	$\frac{1}{\sqrt{-1+u^2}\pi}$	H	CDIF
163	139	1	$-1 + u^2$	H	AB
164	140	1	$\sqrt[4]{-1 + u^2}$	H	R
165	141	1	$(-1 + u^2)^{3/2}$	H	K
166	142	1	$e^{\sqrt{-1+u^2}}$	H	LL
167	143	1	$\log(\sqrt{-1 + u^2})$	H	L
168	144	1	$\arcsin(\sqrt{-1 + u^2})$	H	S
169	145	1	$\arctan(\sqrt{-1 + u^2})$	H	T