

Calculus

W 22 February 2012

RESET THE
SESSION

SET THE
PARTICIPANT
LIST

PLUG IN THE
RECEIVER

Look at an unused file

Cover the look ahead

Topics covered are in bounds

Boxed answers agree with
TurningPoint answers

Points agree with
TurningPoint points

Points total to 100

$$(a + b)^5 =$$

$$(h + 2)^3 =$$

$$(x - y)^4 =$$

$$(2x - 8y)^3 =$$

LOOK AHEAD

logarithmic derivatives

$$(d/dx)[(1 + x^2)^{x^3+x+1}]$$

$$(d/dx)(\sqrt[5]{x})$$

derivs w.r.t. x of exprs of y

derivs of arcsin, arccos

derivs of arctan, arccot

antideriv of x^4 w.r.t. x

(indef) integral of x^4 w.r.t. x

LOOK AHEAD

principle of logarithmic differentiation

$$(d/dx)(2^x), (d/dx)(x^{\cos x})$$

$$(d/dx)(\sqrt[3]{x}), (d/dx)(\log_2(x))$$

derivs of arcsin, arccos

derivs of arctan, arccot

$$\lim_{x \rightarrow -\infty} \left(\sqrt{x^2 + 3x} + x \right)$$

LOOK AHEAD

$$(d/dx)(y^5)$$

$$(d/dx)(\sqrt[5]{x})$$

$$(d/dx)(\sin y)$$

derivs of arcsin, arccos

derivs of arctan, arccot

antideriv of $\sin x$ w.r.t. x

(indef) integral of $\sin x$ w.r.t. x

QUIZ
FOLLOWS

Find $\log_{10}(7)$,

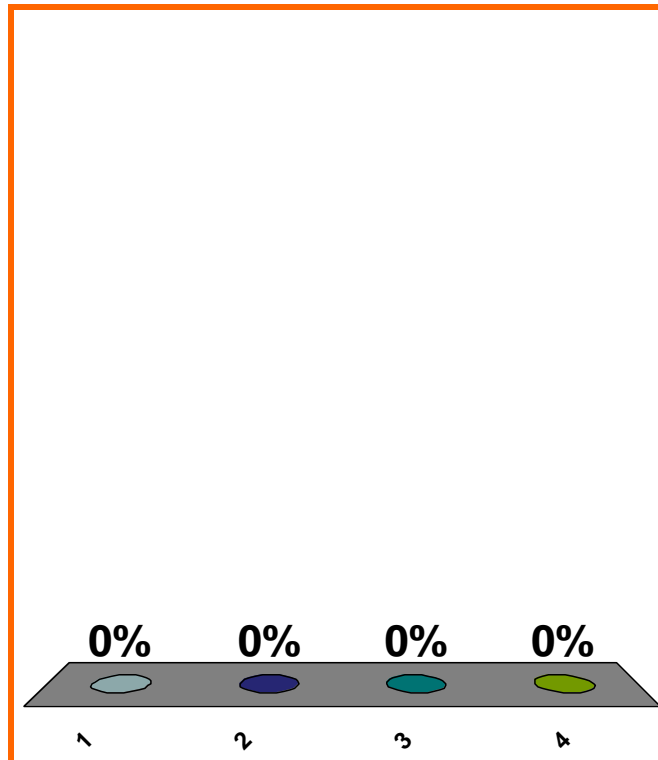
i.e., solve $10^{??} = 7$.

(a) $\frac{\ln 10}{\ln 7}$

(b) $\frac{\ln 7}{\ln 10}$

(c) $\ln(7/10)$

(d) none of the above



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

0 of 5

precalc

0 pts

8

Find $\log_{10}(x)$,

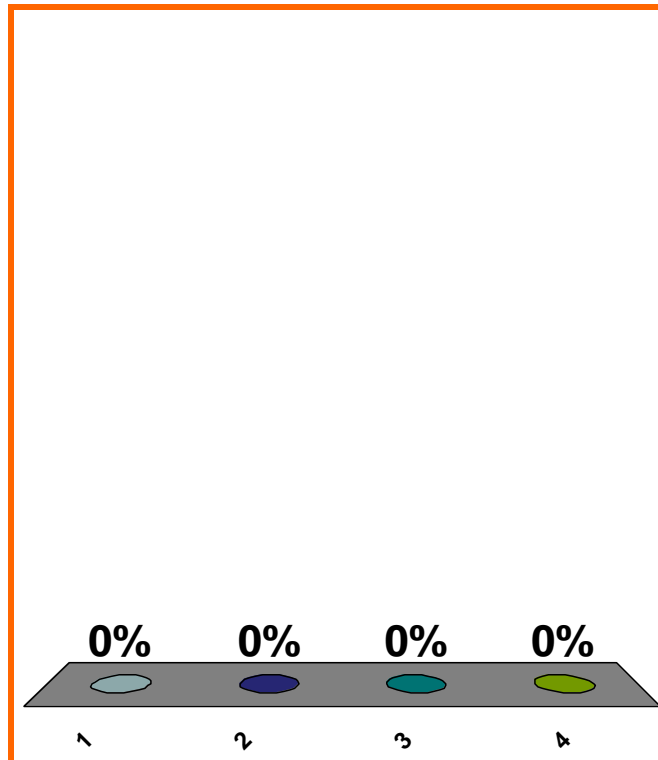
i.e., solve $10^{??} = x$.

(a) $\frac{\ln 10}{\ln x}$

(b) $\frac{\ln x}{\ln 10}$

(c) $\ln(x/10)$

(d) none of the above



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

0 of 5

precalc

0 pts

$$\log_{10}(x) = \frac{\ln x}{\ln 10}$$

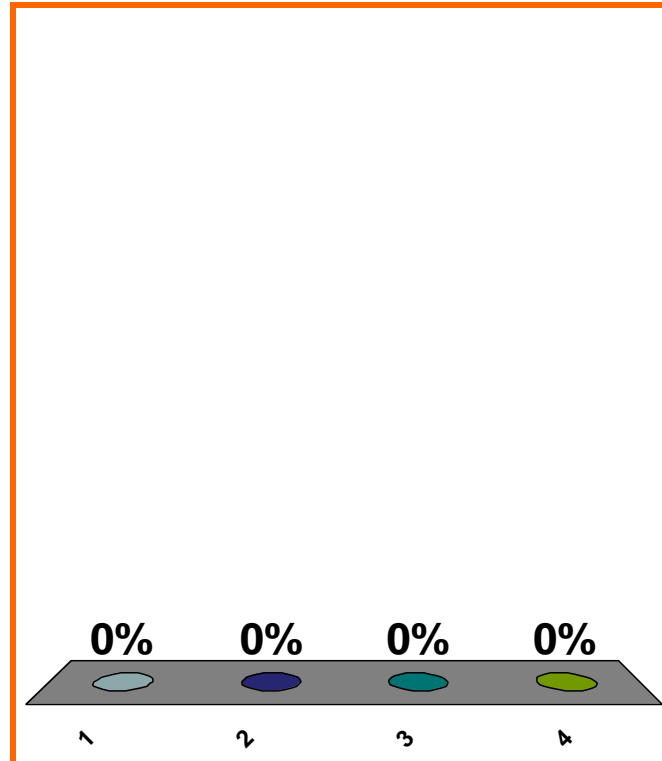
$$\frac{d}{dx} [\log_{10}(x)] = ?? \quad x > 0$$

(a) $\frac{1/x}{\ln 10}$

(b) $\frac{1/x}{1/10}$

(c) $\frac{\ln x}{1/10}$

(d) none of the above



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

0 of 5

Topic 0400

0 pts

10

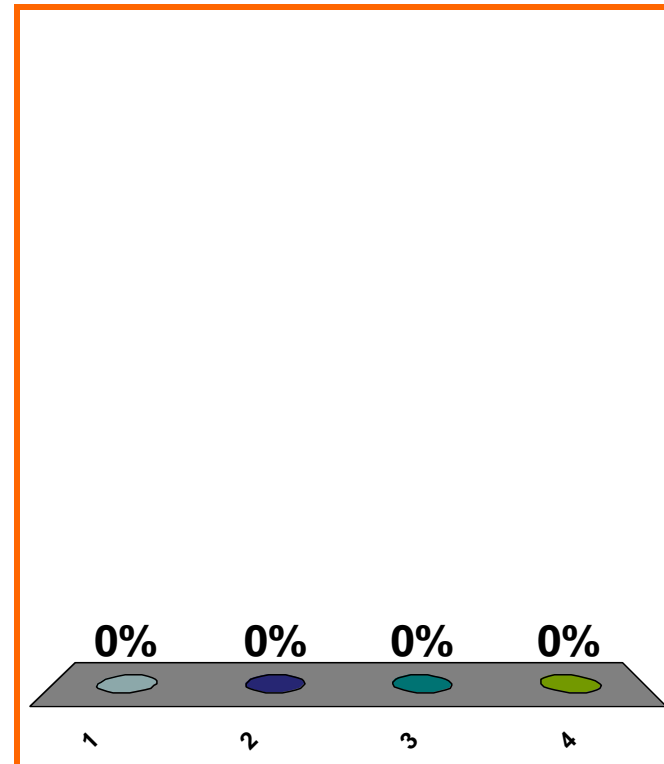
$$\frac{a/b}{c} = ??$$

(a) $\frac{ab}{c}$

(b) $\frac{a}{bc}$

(c) $\frac{ac}{b}$

(d) none of the above



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

0 of 5

precalc

0 pts

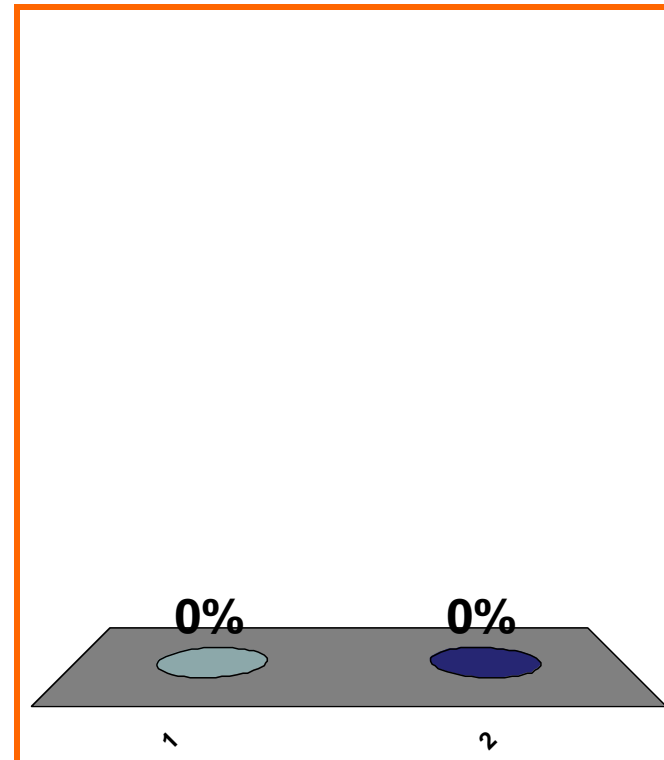
T or F:

f incr. on $(2, 3)$

$\Rightarrow f' > 0$ on $(2, 3)$

(a) True

(b) False



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

$$\frac{d}{dx} [7^{1/2}] = ??$$

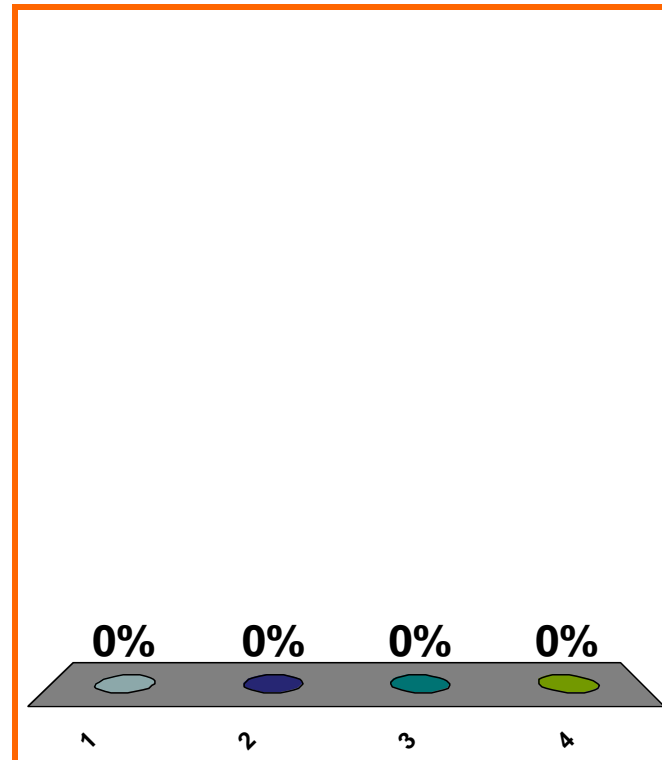
(a) DNE

(b) $[1/2] [7^{-1/2}]$

(c) $7^{1/2}(\ln 7)$

(d) none of the above

Correct answer: 0



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

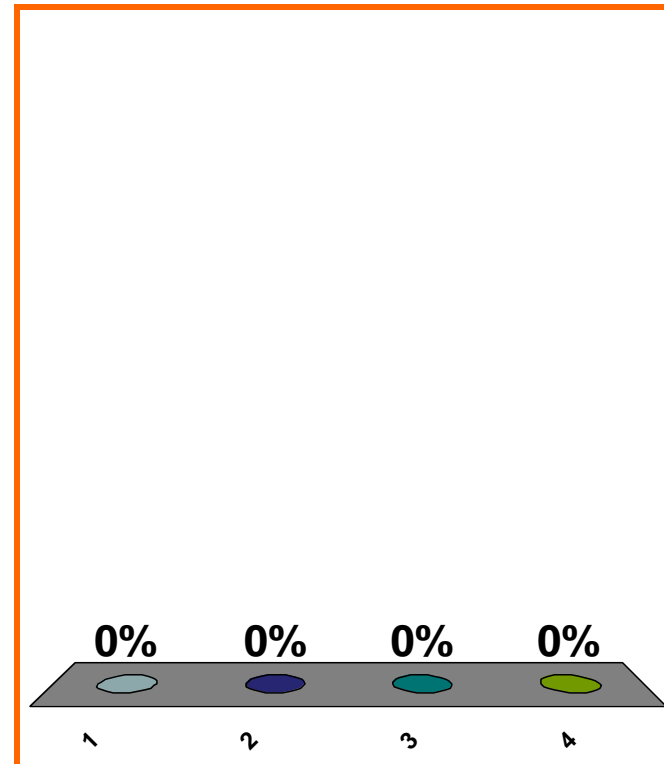
(a) $\ln |2x + 3|$

$$\frac{d}{dx} \left[\ln |x^2 + 3x - 1| \right]$$

(b) $\frac{x^2 + 3x - 1}{2x + 3}$

(c) $\frac{2x + 3}{x^2 + 3x - 1}$

(d) none of the above



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

0 of 5

Topic 0390

0 pts

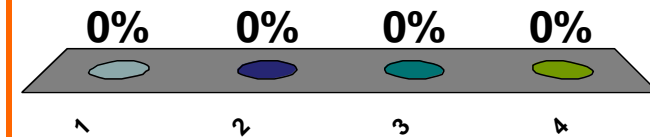
$$(a) x(1+x^2)^{x-1} \left[\frac{d}{dx}(1+x^2) \right]$$

$$\frac{d}{dx} \left[(1+x^2)^x \right]$$

$$(b) x(2x)^{x-1}$$

$$(c) \left[(1+x^2)^x \right] \left[\frac{d}{dx} (x \cdot \ln(1+x^2)) \right]$$

(d) none of the above



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

0 of 5

Topic 0400

0 pts

15

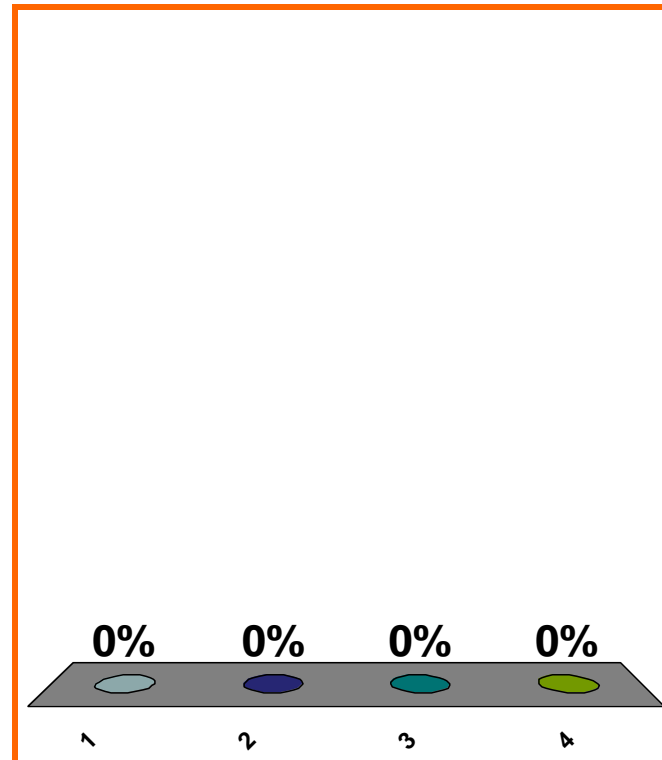
$$\frac{d}{dx} \left[\ln \left((x^2 + 4x - 1)^{1/3} \right) \right]$$

$$(a) \frac{1}{3} \cdot \frac{2x + 4}{x^2 + 4x - 1}$$

$$(b) \left(\frac{2x + 4}{x^2 + 4x - 1} \right)^{1/3}$$

$$(c) \frac{1}{3} \left(\frac{2x + 4}{x^2 + 4x - 1} \right)^{-2/3}$$

(d) none of the above



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

0 of 5

Topic 0390

20 pts

16

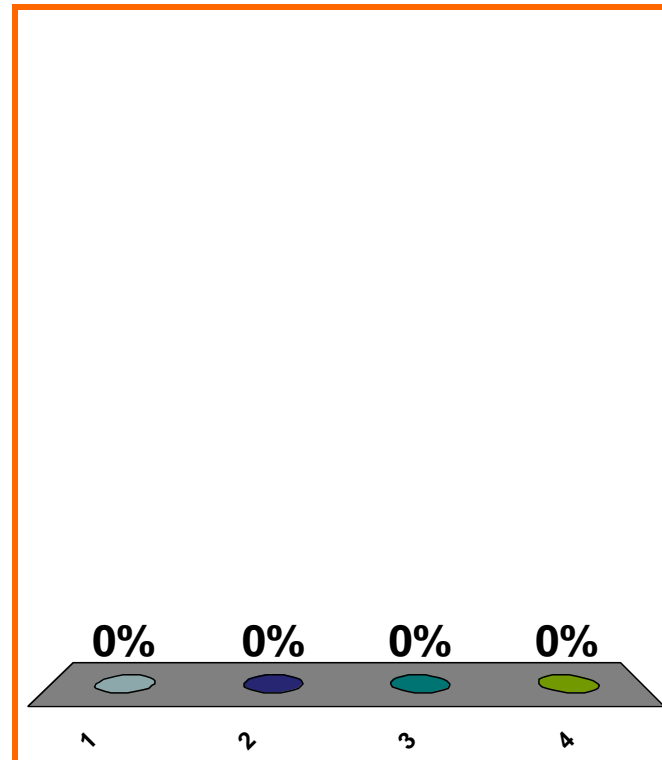
$$\frac{d}{dx} [(x^2)(\sin x)] = ??$$

(a) $(2x)(\cos x) + (x^2)(\sin x)$

(b) $(2x)(\sin x) + (x^2)(\cos x)$

(c) $(2x)(\cos x)$

(d) none of the above



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

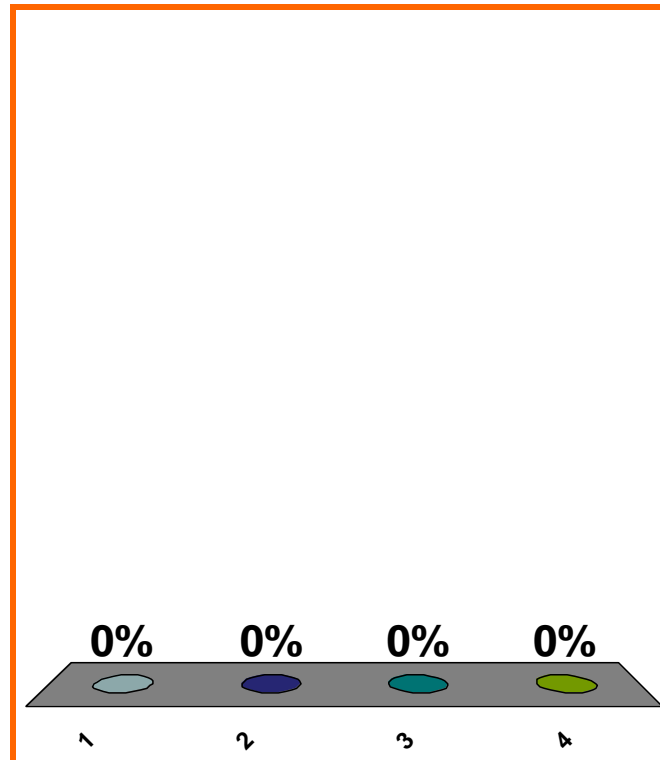
$$\frac{d}{dx} \left[\frac{\sin x}{x^2} \right] = ??$$

$$(a) \frac{(x^2)(\cos x) - (\sin x)(2x)}{x^4}$$

$$(b) \frac{\cos x}{2x}$$

$$(c) \frac{(\sin x)(2x) - (x^2)(\cos x)}{x^4}$$

(d) none of the above



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

0 of 5

Topic 0360

20 pts

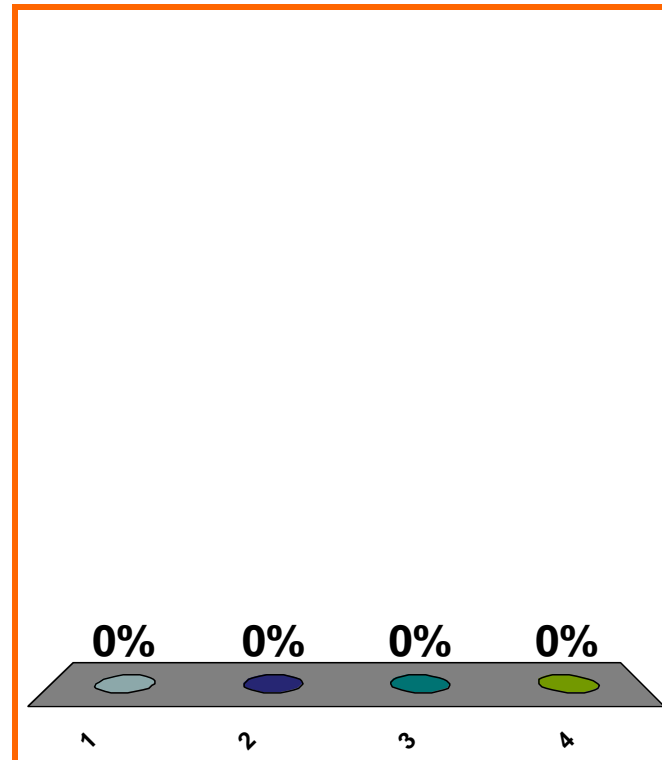
$$(d/dx)(\ln |x|)$$

(a) $1/x, x > 0$

(b) $|1/x|$

(c) $1/x$

(d) none of the above



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

$$(d/dx)(\arctan x) = \frac{1}{1+x^2}$$

$$(d/dx)(\arctan e^x) = ??$$

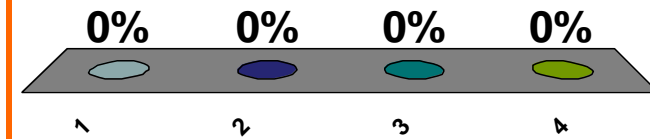
(a) $\frac{1}{1+(e^x)^2}$

(b) $(\operatorname{arcsec}^2 e^x)(e^x)$

(c) $\frac{1}{1-(e^x)^2}$

(d) none of the above

Correct answer: $\frac{e^x}{1+(e^x)^2}$



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

0 of 5

Topic 0370

20 pts

20

SAVE THE
SESSION
DATA

RETURN TO
PRESENTATION