

Calculus

W 17 October 2012

RESET THE
SESSION

SET THE
PARTICIPANT
LIST

PLUG IN THE
RECEIVER

Boxed answers agree with
TurningPoint answers

Points agree with
TurningPoint points

Points total to 100

Topics covered are in bounds

QUIZ
FOLLOWS

$$\left[\frac{d}{dx} \right] [(\cos y) + 2y^3] = ??$$

(a) $-(\sin y) + 6y^2$

(b) $-(\sin y') + 6(y')^2$

(c) $-(\sin y)y' + 6y^2$

(d) none of the above

Correct answer: $-(\sin y)y' + 6y^2y'$

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

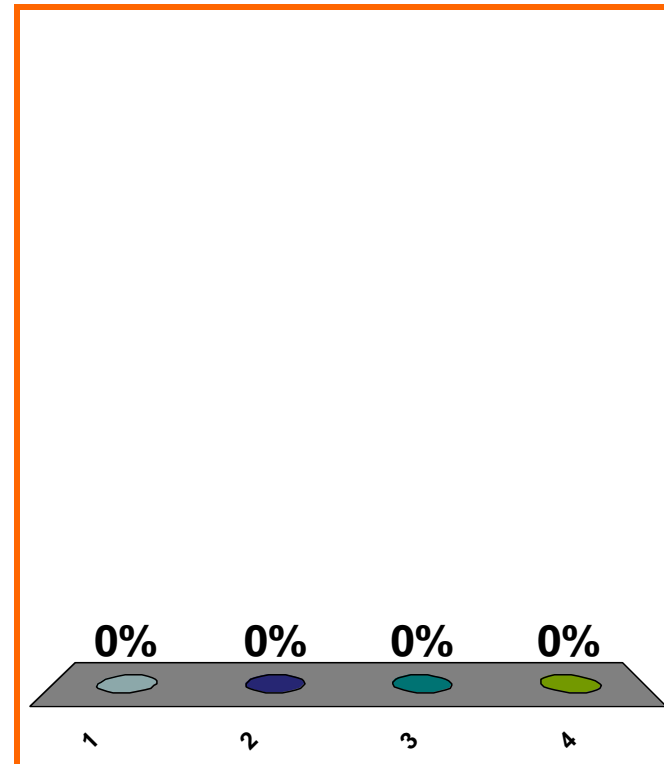
$$[d/dx][\tan(xy)] = ??$$

(a) $-\sec^2(xy)[y + xy']$

(b) $-\sec^2(xy)[y + x]$

(c) $\sec^2(xy)[y + xy']$

(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
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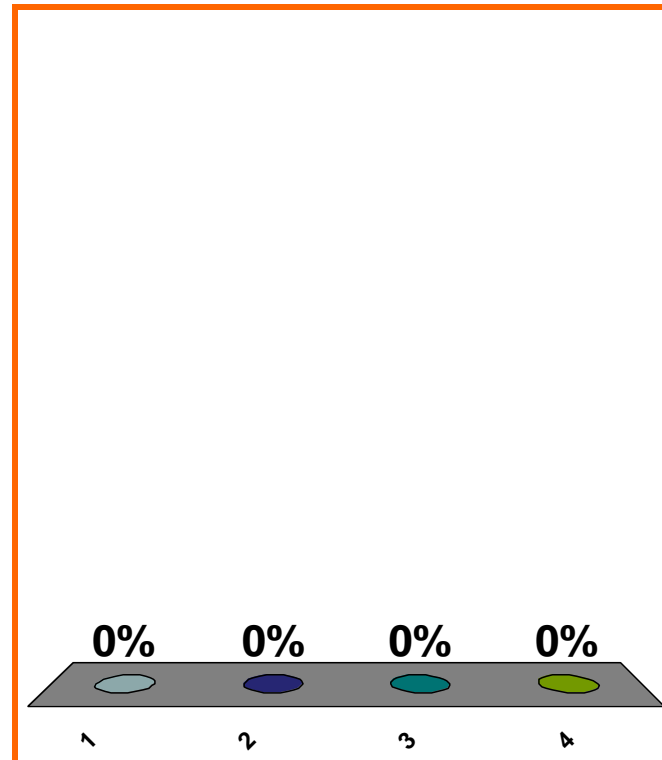
$$[d/dx][xe^y + y] = ??$$

(a) $e^y + xe^y + 1$

(b) $e^y + xe^y y' + y'$

(c) $e^y + xe^y + y'$

(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

$$\begin{aligned} [d/dx][xe^y + y] &= e^y + xe^y y' + y' \\ &= e^y + (xe^y + 1)y' \end{aligned}$$

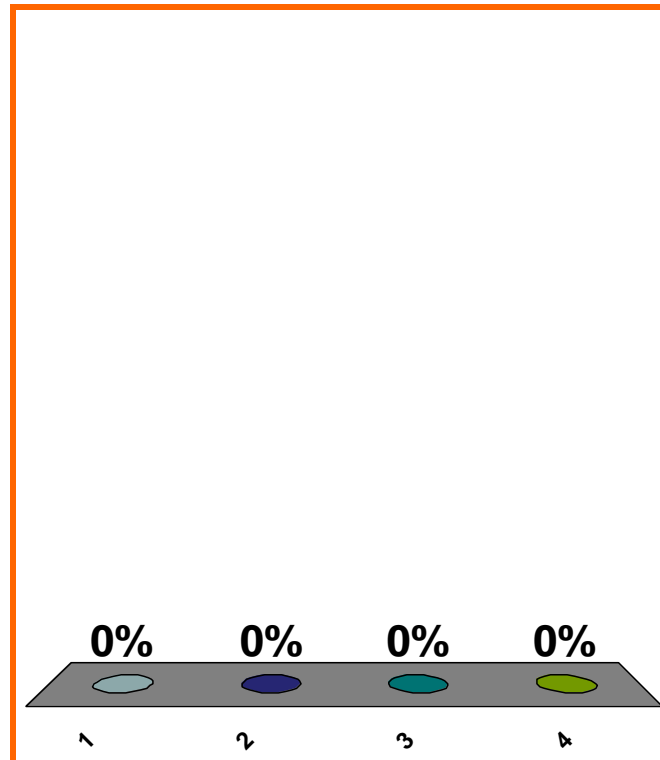
$$\begin{aligned} xe^y + y &= 1 \\ y' &= ?? \end{aligned}$$

(a) $-e^y / (xe^y + 1)$

(b) $e^y / (xe^y + 1)$

(c) $(1 - e^y) / (xe^y + 1)$

(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

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Topic 0430

10 pts

$$y' = -e^y / (xe^y + 1)$$

$$xe^y + y = 1$$

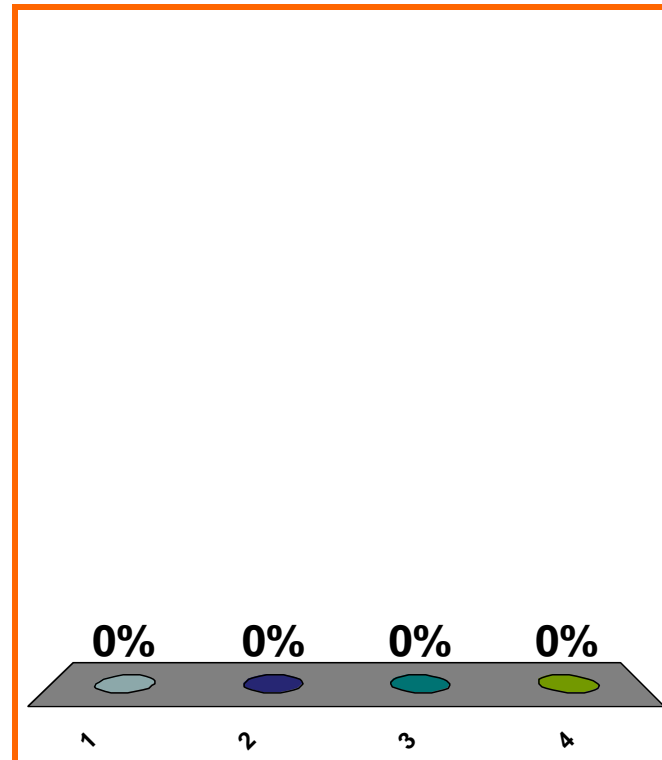
slope at (0, 1)?

(a) $-e$

(b) -1

(c) 0

(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
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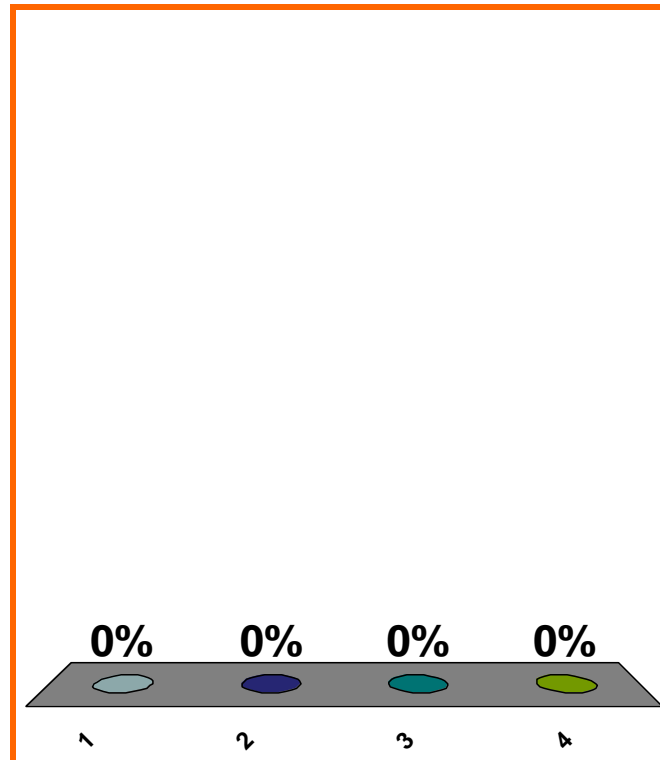
$$\lim_{x \rightarrow \infty} x e^{-x} = \lim_{x \rightarrow \infty} ?? \stackrel{L'H}{=} \dots$$

(a) $\frac{e^x}{x}$

(b) $\frac{x}{e^x}$

(c) e^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
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$$\lim_{x \rightarrow \infty} \frac{x}{e^x} = ??$$

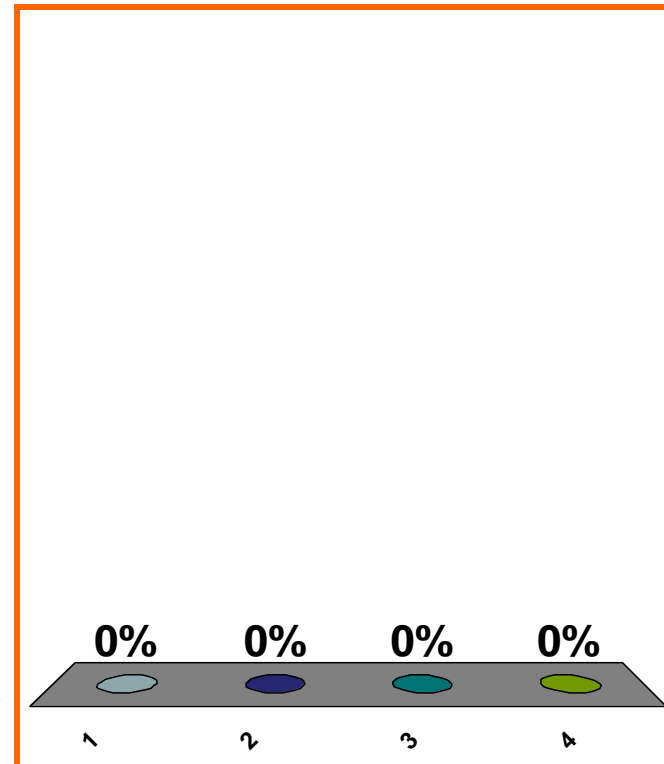
(a) $\lim_{x \rightarrow \infty} \frac{(e^x)(1) - (x)(e^x)}{e^{2x}}$

(b) $\lim_{x \rightarrow \infty} \frac{(x)(e^x) - (e^x)(1)}{e^{2x}}$

(c) $\lim_{x \rightarrow \infty} \frac{(e^x)(1) - (x)(xe^{x-1})}{e^{2x}}$

(d) none of the above

Correct answer: $\lim_{x \rightarrow \infty} \frac{1}{e^x}$



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

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Topic 0410

0 pts

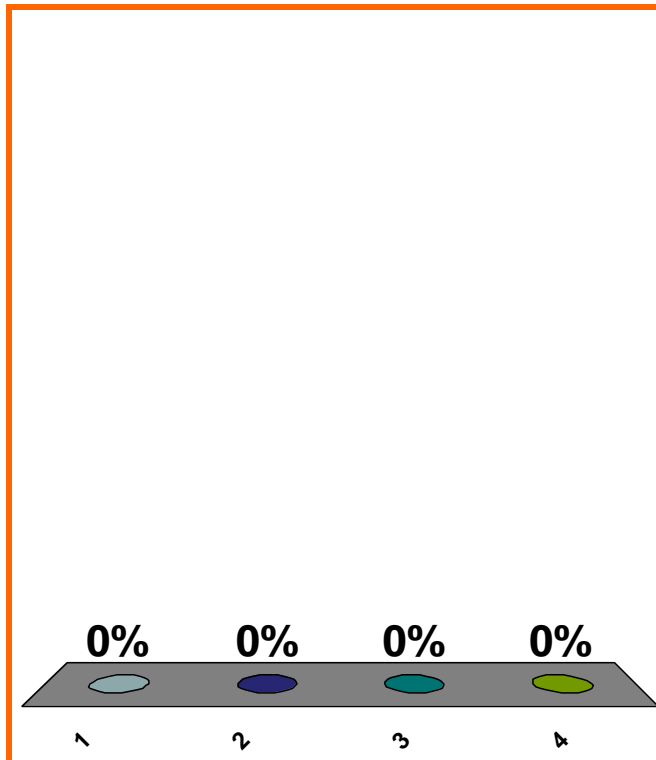
$$\lim_{x \rightarrow 0^+} (\sin x + \cos x)^{1/x} = \exp \left(\lim_{x \rightarrow 0^+} ?? \right)$$

(a) $(1/x)(\ln(\sin x) + \ln(\cos x))$

(b) $(\ln(\sin x) + \ln(\cos x))^{1/x}$

(c) $(1/x) [\ln(\sin x + \cos x)]$

(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
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Topic 0420

10 pts

12

$$\ln(1 + [f(x)]) \quad x \xrightarrow{\sim} a \quad ??$$

provided $f(x) \xrightarrow{x \rightarrow a} 0$

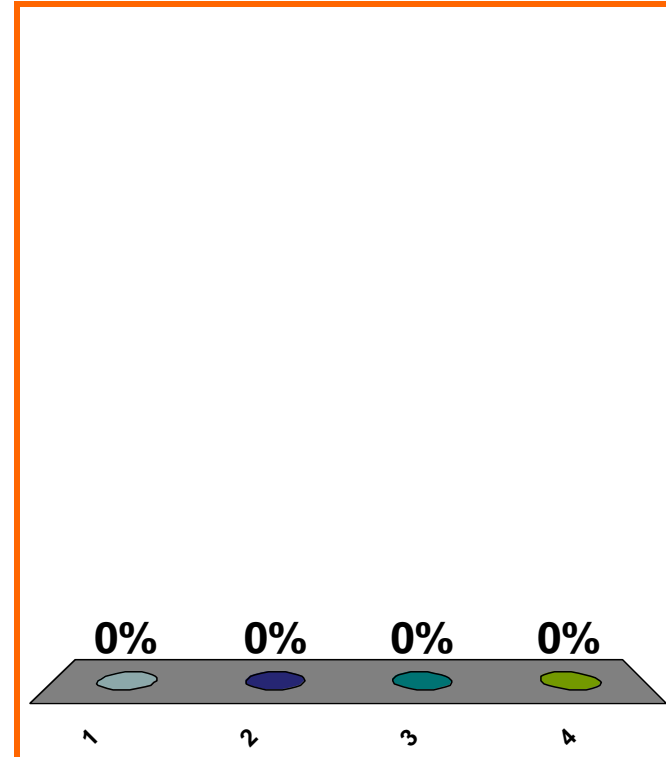
(a) 0

(b) $\ln[f(x)]$

(c) $1 + [f(x)]$

(d) none of the above

Correct answer: $f(x)$



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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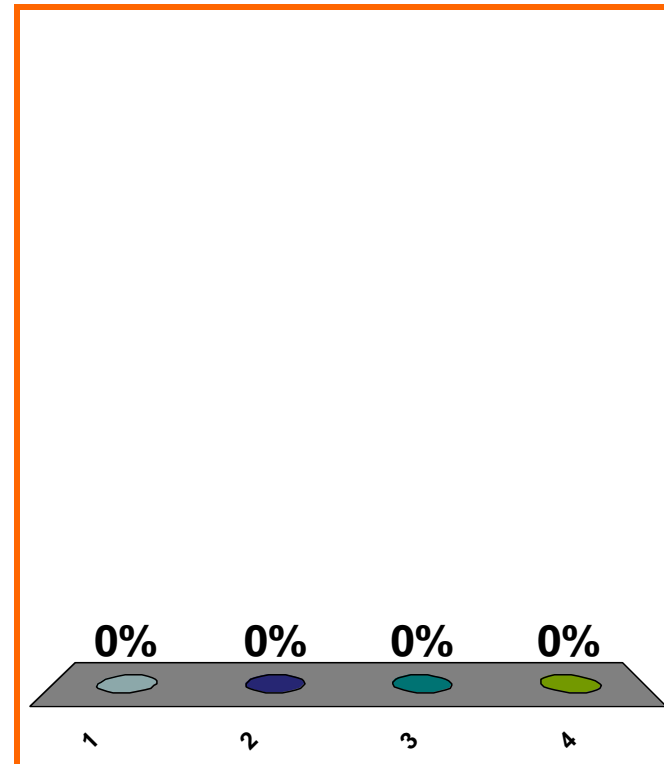
$$\ln(1 + (3/n)) \quad n \rightarrow \infty \quad ??$$

(a) $1/n^2$

(b) $3/n$

(c) 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
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$$\ln(1 + (3/n)) \underset{n \rightarrow \infty}{\sim} 3/n$$

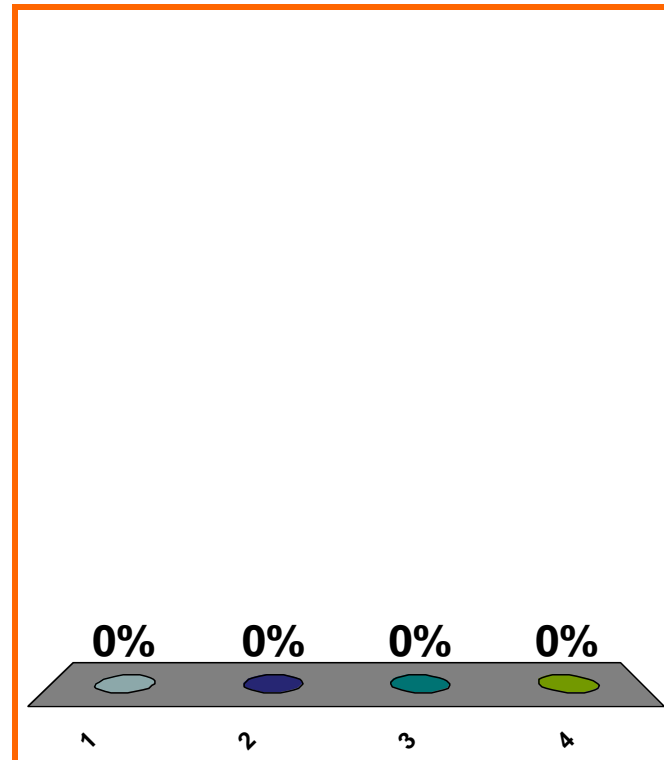
$$\lim_{n \rightarrow \infty} n[\ln(1 + (3/n))] = ??$$

(a) 0

(b) 3

(c) ∞

(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
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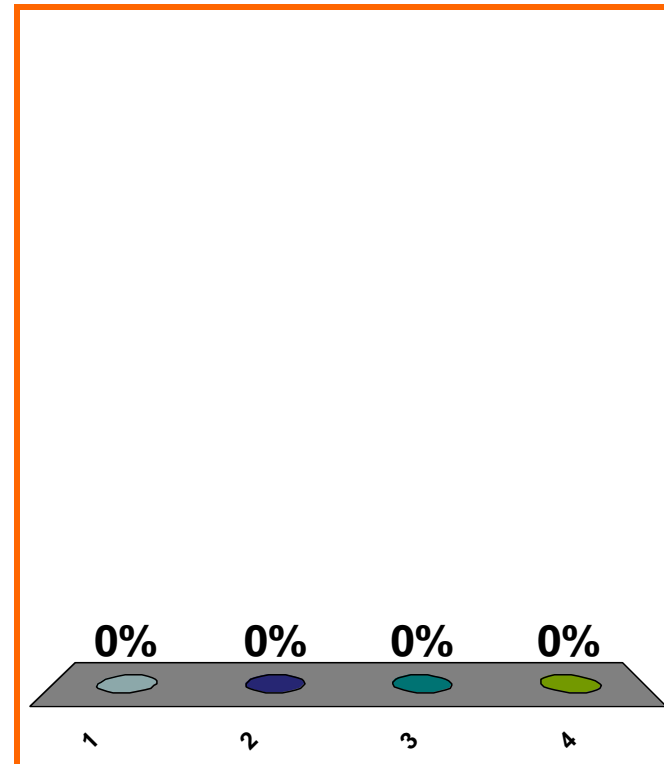
$$\ln(1 + 5x + 4x^2) \quad x \sim 0 \quad ??$$

(a) $4x^2$

(b) $5x$

(c) 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

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Topic 0420

10 pts

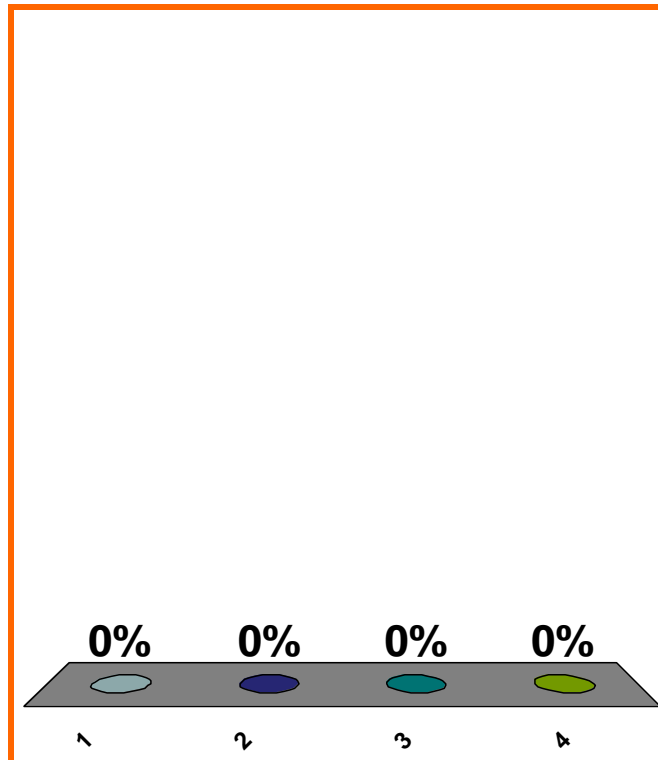
$$\frac{d}{dx} [(\ln 8)(\sin 3)] = ??$$

(a) 0

(b) $(1/8)(\sin 3) + (\ln 8)(\cos 3)$

(c) $(1/8)(\cos 3)$

(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

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Topic 0310

40 pts

17

Principle of log diff:

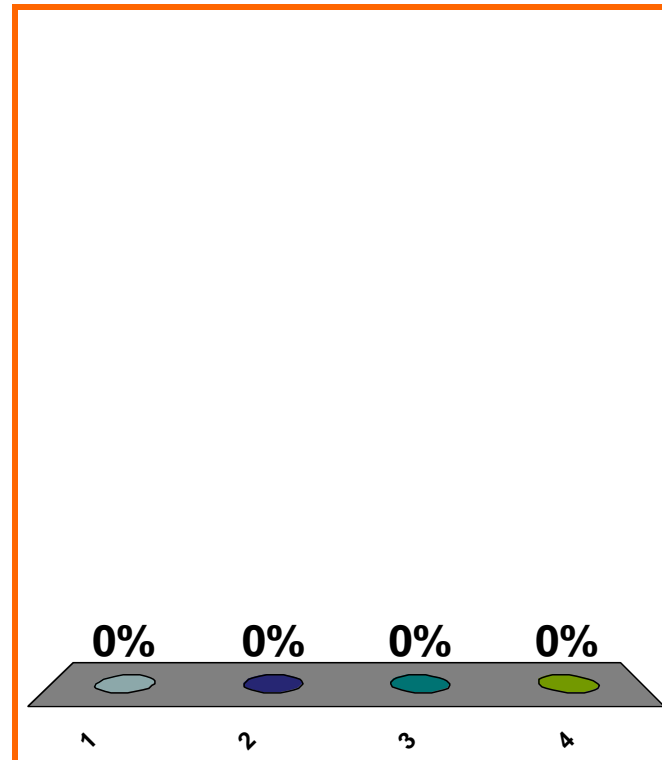
$$f'(x) = ??$$

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

(b) $[f'(x)]/[f(x)]$

(c) $[f(x)][(d/dx)(\ln |f(x)|)]$

(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

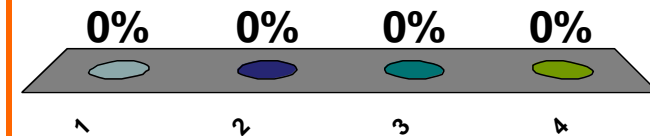
(a) $x(2x)^{x-1}$

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

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

(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

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Topic 0400

0 pts

19

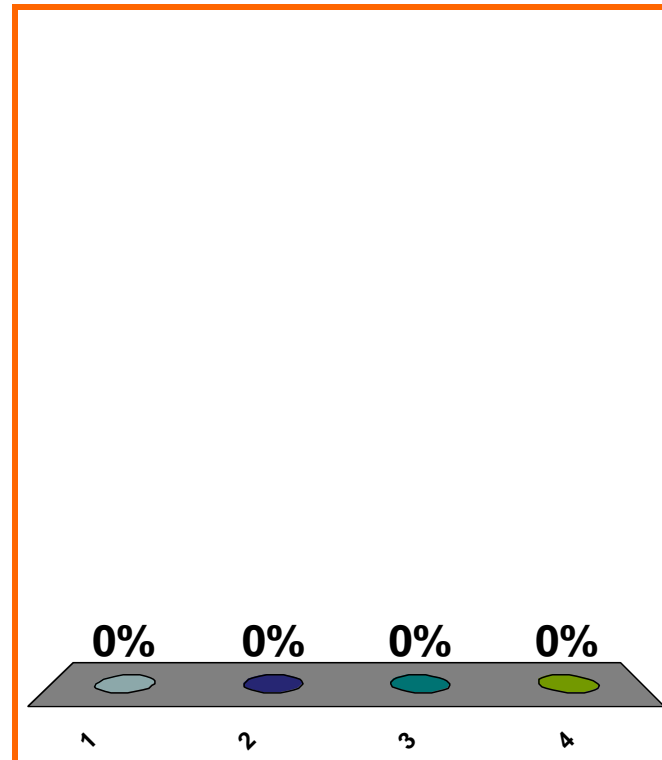
$$\lim_{x \rightarrow \infty} \left[\frac{\sin x}{x} \right] \stackrel{\text{L'H}}{=} \lim_{x \rightarrow \infty} [??]$$

(a) $\frac{-\cos x}{1}$

(b) $\frac{\cos x}{1}$

(c) L'Hôpital does **not** apply.

(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
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Topic 0410

0 pts

20

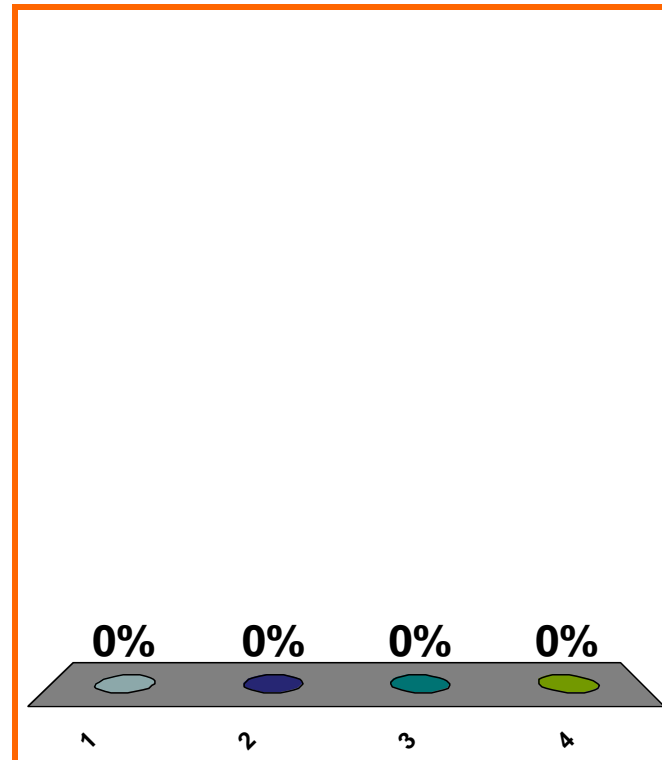
$$\lim_{x \rightarrow 0} \frac{e^x - 1 - x}{x^2} \stackrel{\text{L'H}}{=} \lim_{x \rightarrow 0} \frac{e^x - 1}{2x} = ??$$

(a) $\lim_{x \rightarrow 0} \frac{[2x][e^x] - [e^x - 1][2]}{4x^2}$

(b) $\lim_{x \rightarrow 0} \frac{e^x}{2}$

(c) DNE

(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

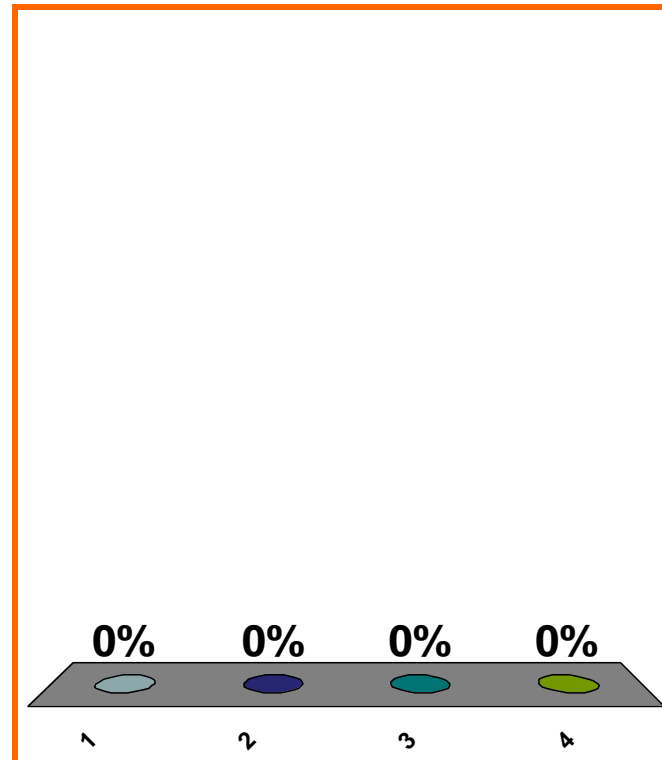
$$\lim_{x \rightarrow 0} \frac{e^x - 1 - x}{x^2} \stackrel{\text{L'H}}{=} \lim_{x \rightarrow 0} \frac{e^x - 1}{2x} \stackrel{\text{L'H}}{=} \lim_{x \rightarrow 0} \frac{e^x}{2} = ??$$

(a) ∞

(b) $\frac{1}{2}$

(c) DNE

(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

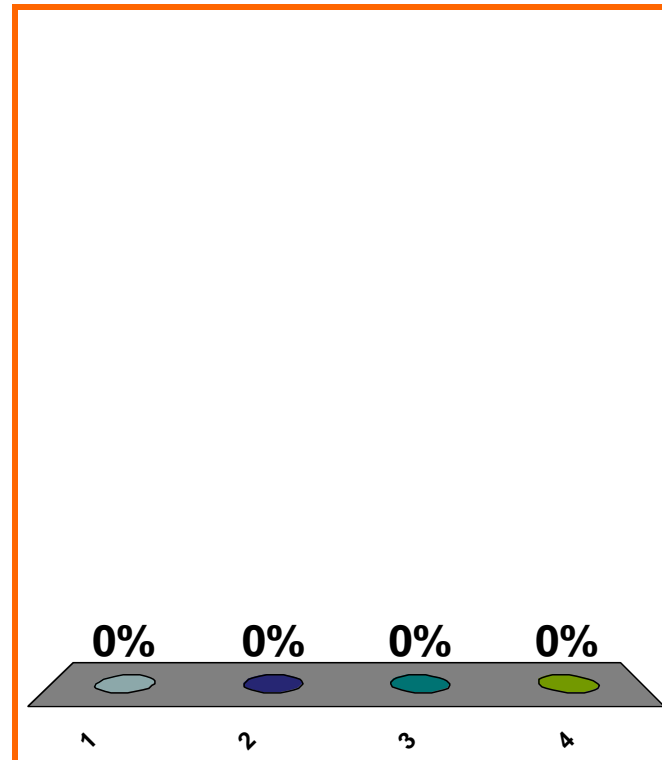
$$\lim_{x \rightarrow 0} \frac{e^x - x}{x^3} = ??$$

(a) ∞

(b) $\lim_{x \rightarrow 0} \frac{e^x - 1}{3x^2}$

(c) DNE

(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

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Topic 0410

0 pts

23

SAVE THE
SESSION
DATA

RETURN TO
PRESENTATION