

Calculus

F 8 March 2013

RESET THE
SESSION

SET THE
PARTICIPANT
LIST

PLUG IN THE
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Boxed answers agree with
TurningPoint answers

Points agree with
TurningPoint points

Points total to 100

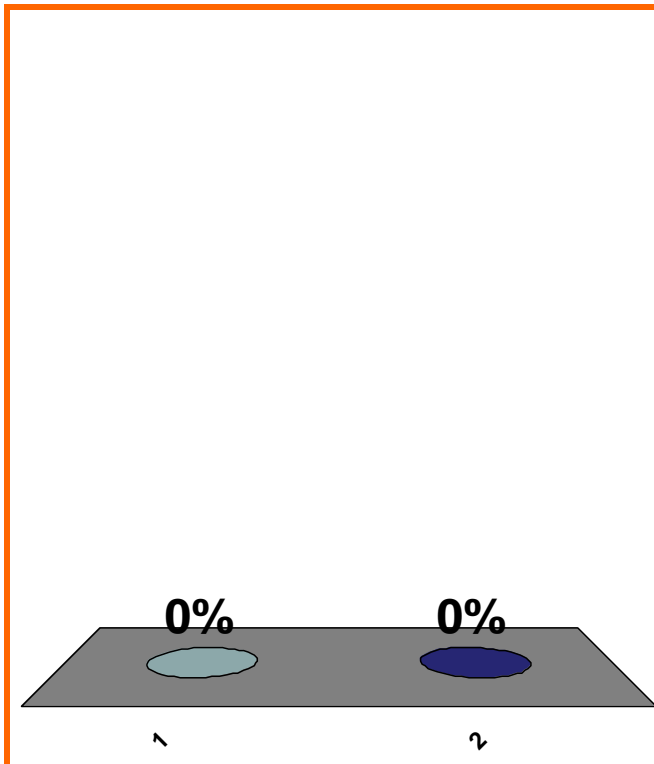
Topics covered are in bounds

QUIZ
FOLLOWS

$$1 + 1 = ??$$

(a) 1

(b) 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

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arithmetic

0 pts

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

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

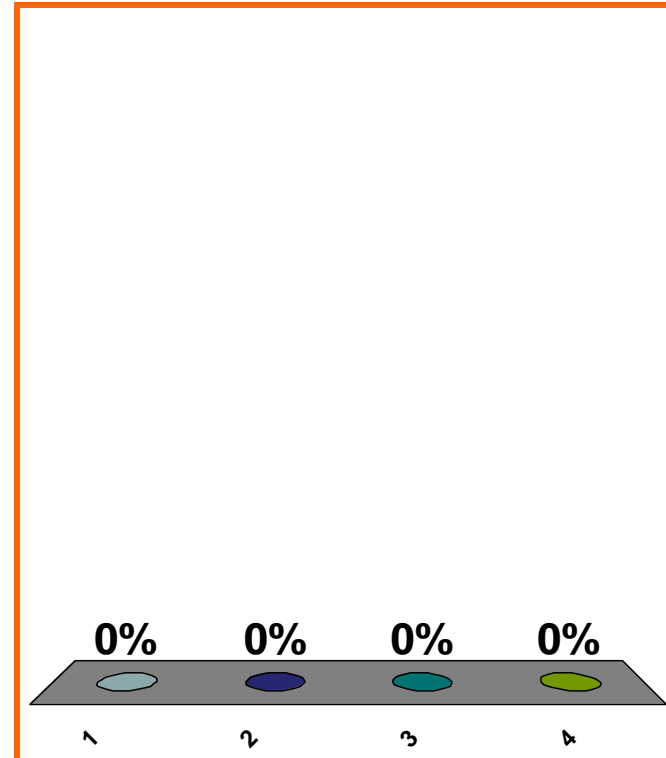
(a) 0

(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
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

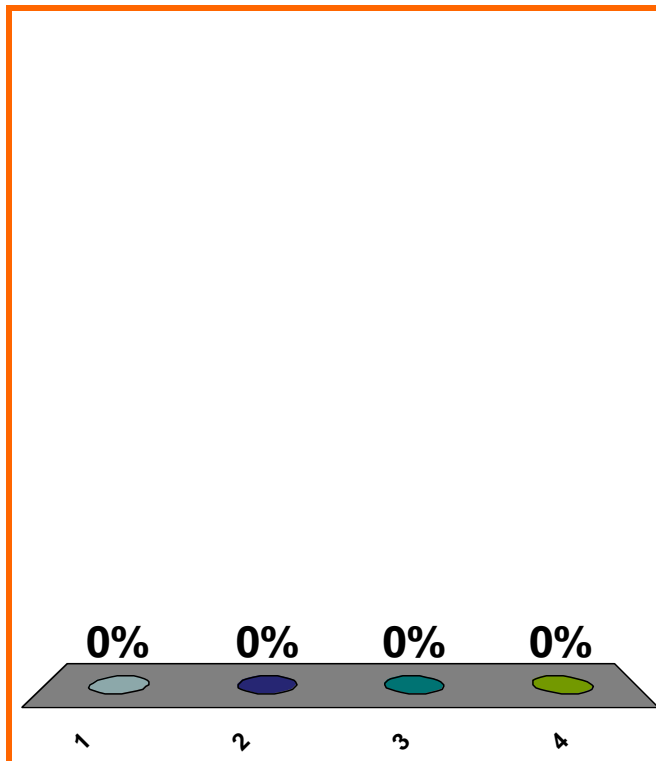
$$\lim_{x \rightarrow 0^+} (\sin x + \cos x)^{1/x} = \exp \left(\lim_{x \rightarrow 0^+} ?? \right)$$

(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
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

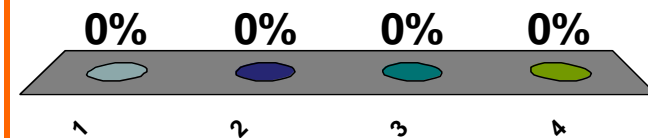
$$(a) x(1+x^2)^{x-1} \left[\frac{d}{dx}(1+x^2) \right]$$

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

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

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

(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

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Topic 0400

20 pts

8

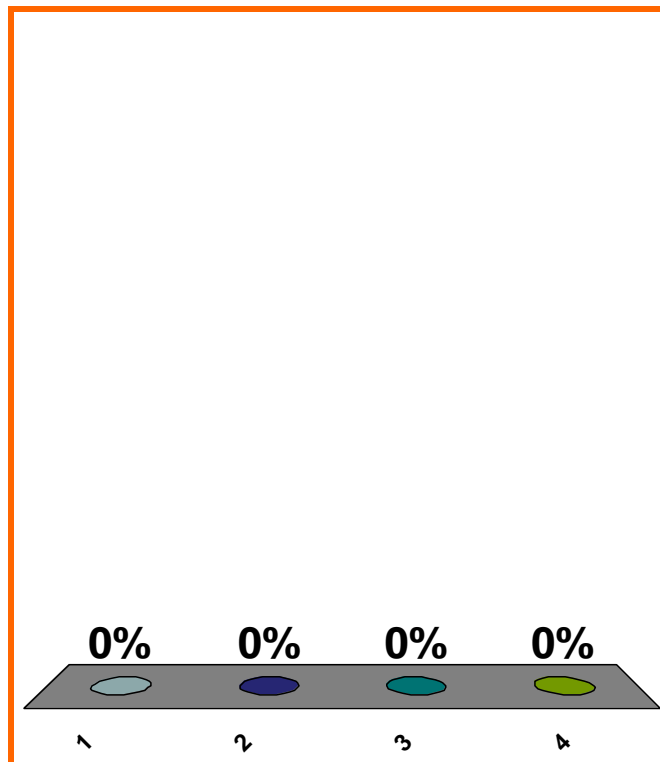
logarithmic derivative w.r.t. x of
 $-x^4 + 5x^2 + 2$

(a) $-4x^3 + 10x$

(b) $\frac{-4x^3 + 10x}{-x^4 + 5x^2 + 2}$

(c) $\frac{-x^4 + 5x^2 + 2}{-4x^3 + 10x}$

(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

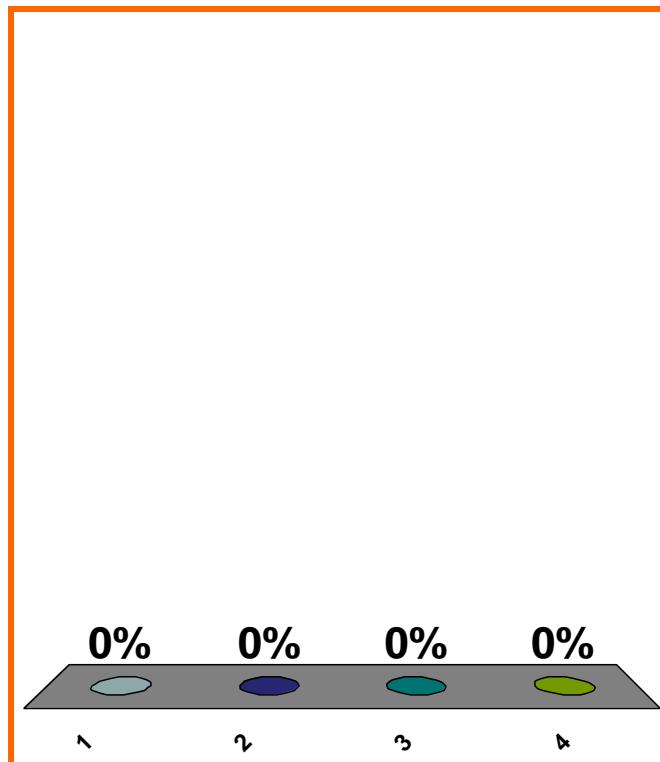
$$\lim_{x \rightarrow 0} \frac{e^x - x - 1}{x^4} \stackrel{\text{L'H}}{=} \lim_{x \rightarrow 0} \frac{e^x - 1}{4x^3} = ??$$

(a) $\lim_{x \rightarrow 0} \frac{e^x}{12x^2}$

(b) ∞

(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

END
QUIZ

END
CLASS

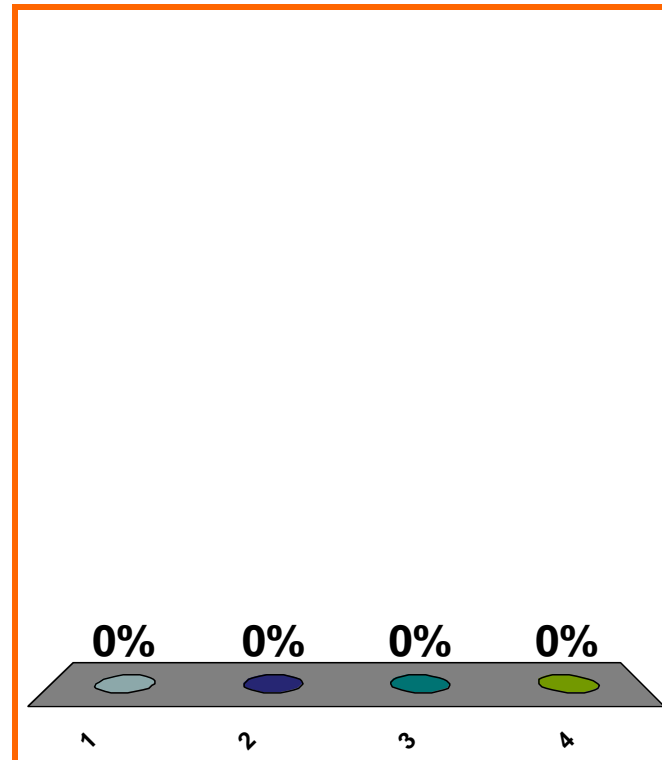
$$\lim_{x \rightarrow 0} \frac{e^x - x - 1}{x^4} = \lim_{x \rightarrow 0} \frac{e^x - 1}{4x^3} = \lim_{x \rightarrow 0} \frac{e^x}{12x^2} = ??$$

(a) $\lim_{x \rightarrow 0} \frac{e^x}{24x}$

(b) ∞

(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

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

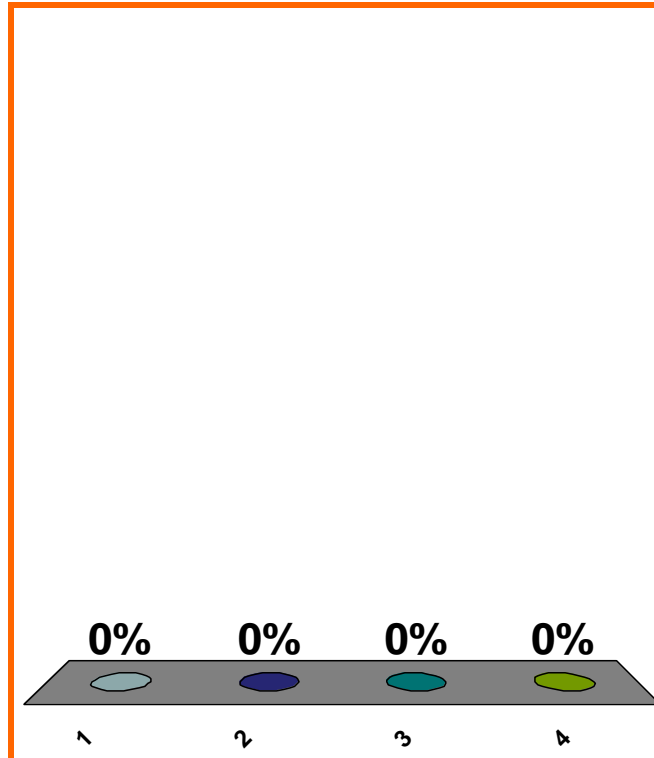
$$(d/dx)(\arctan e^x) = ??$$

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

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

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

(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 0370

0 pts

14

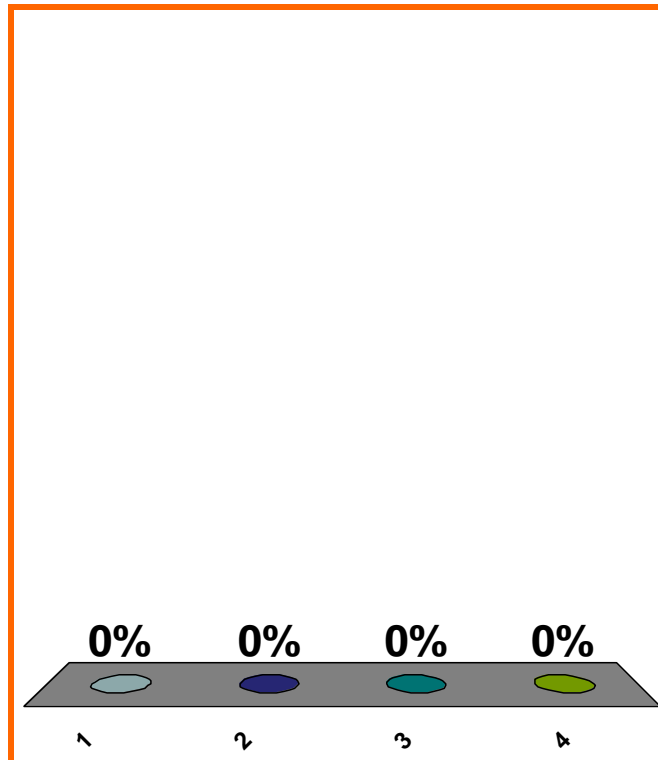
$$\frac{d}{dx} [7^{1/2}] = ??$$

(a) 0

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

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

(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

0 pts

15

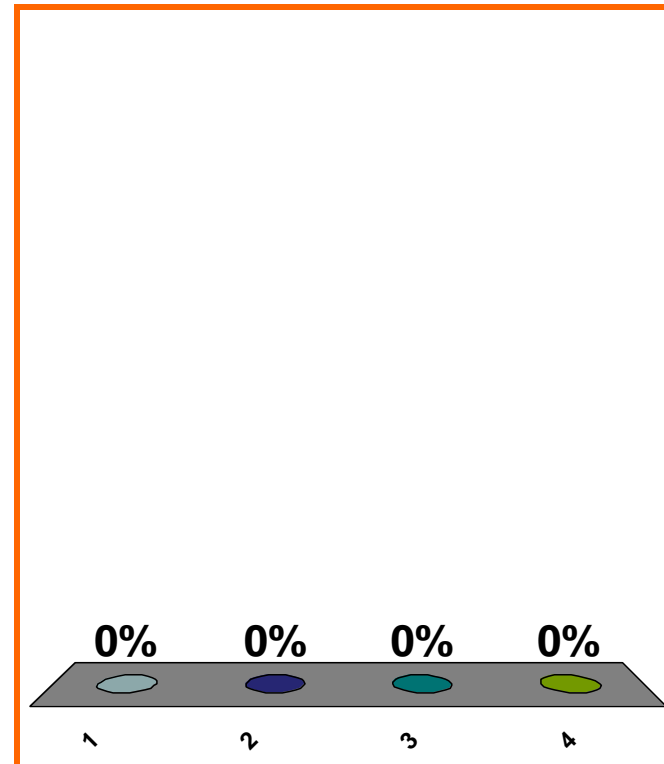
$$3x^3 + 2x \underset{x \rightarrow 0}{\sim} ??$$

(a) $3x^3$

(b) 0

(c) $2x$

(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 0200

0 pts

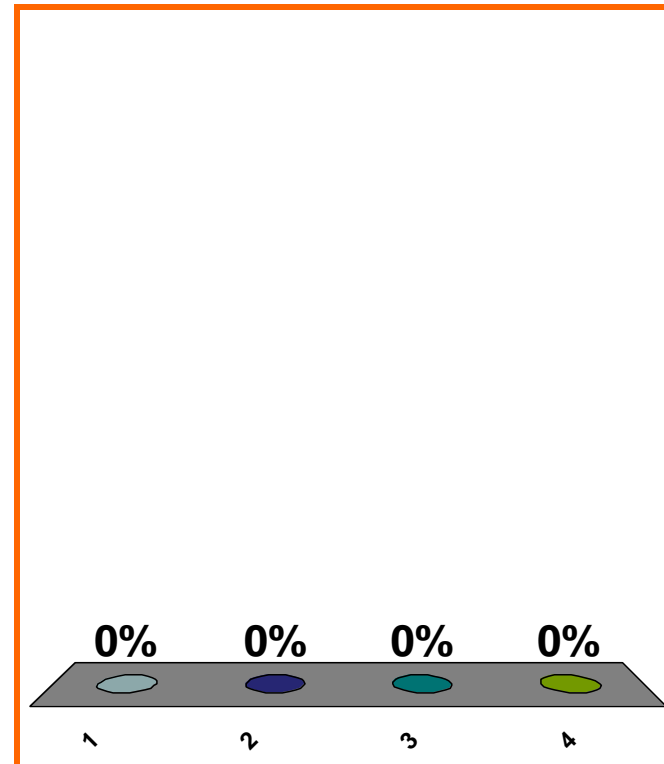
$$4x^5 - 3x^3 + 8x^2 \quad x \rightarrow 0 \quad ??$$

(a) $4x^5$

(b) $8x^2$

(c) 8

(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 0200

0 pts

$$6x^5 + 7x^4 - 8x^3 \quad x \rightarrow 0 \quad ??$$

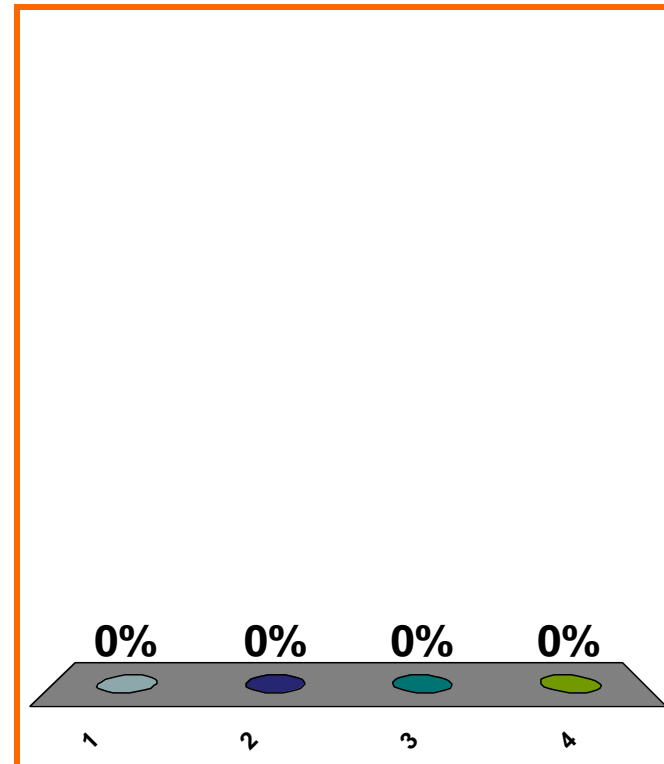
(a) $6x^5$

(b) $7x^4$

(c) $8x^3$

(d) none of the above

Correct answer: $-8x^3$



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

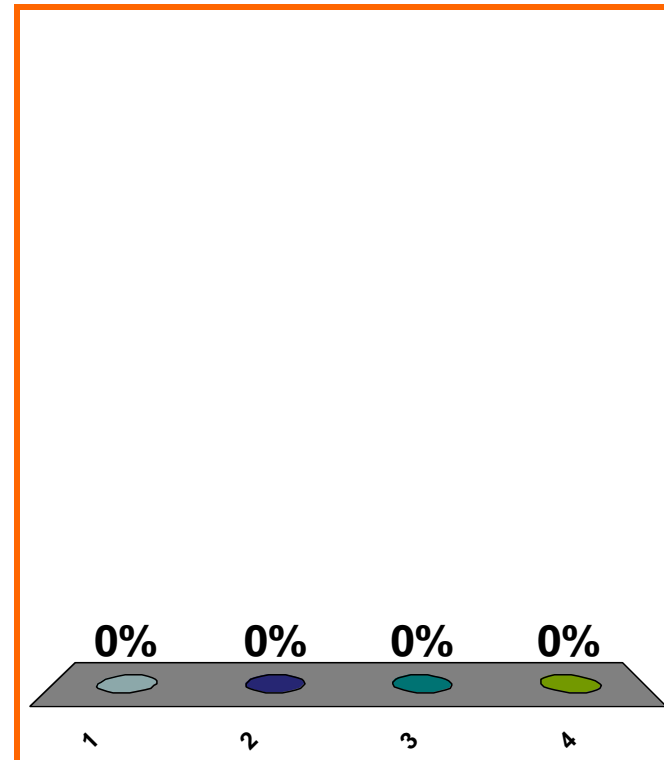
$$\lim_{x \rightarrow 0} \left[\frac{6x^5 + 7x^4 - 8x^3}{7x^5 - 2x^4 + 9x^3} \right] = ??$$

(a) DNE

(b) $-8/9$

(c) $6/7$

(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

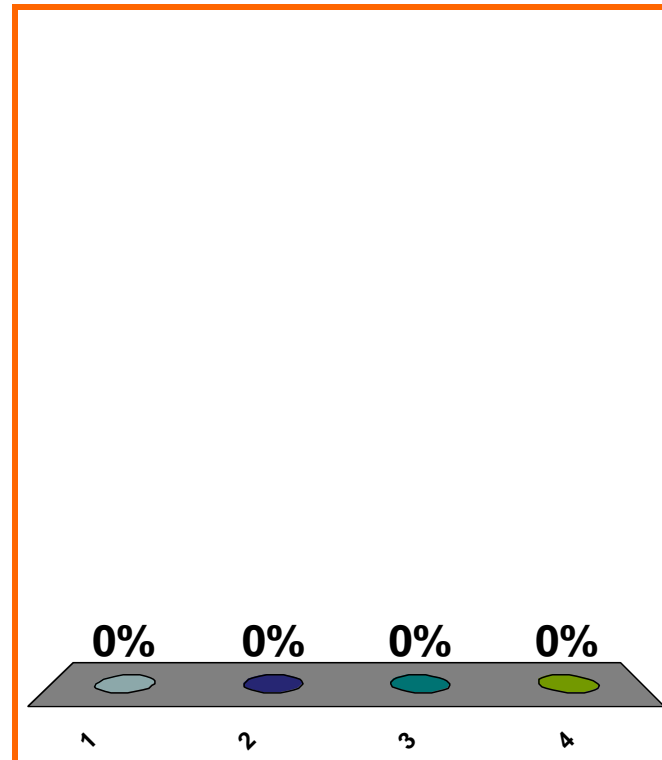
$$\lim_{x \rightarrow 0} \left[\frac{6x^8 + 7x^4 - 8x^3}{7x^5 - 2x^4 + 9x^3} \right] = ??$$

(a) DNE

(b) $-8/9$

(c) $6/7$

(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

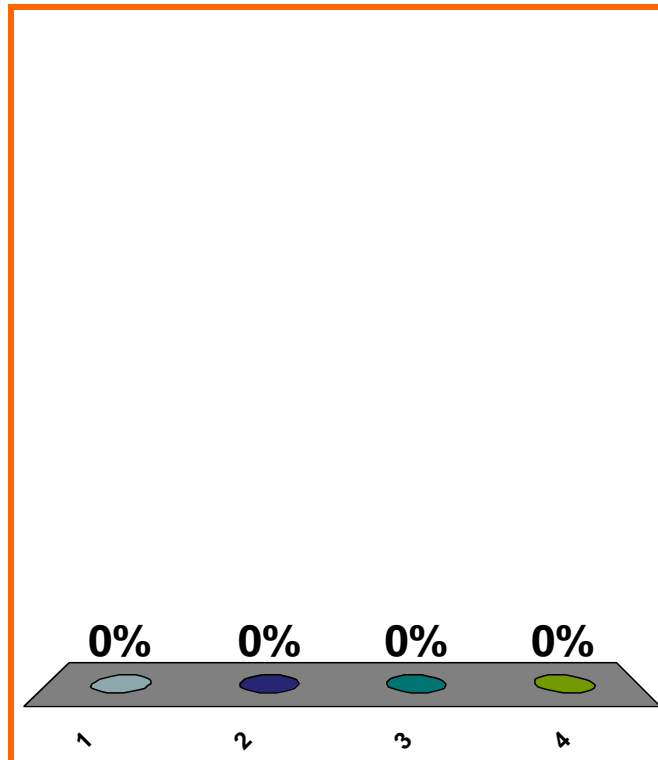
$$\lim_{x \rightarrow 0} \left[\frac{4x^6 - 7x^4 + 4x}{-2x^3 + 7x^2 - 4x} \right] = ??$$

(a) -2

(b) 1

(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

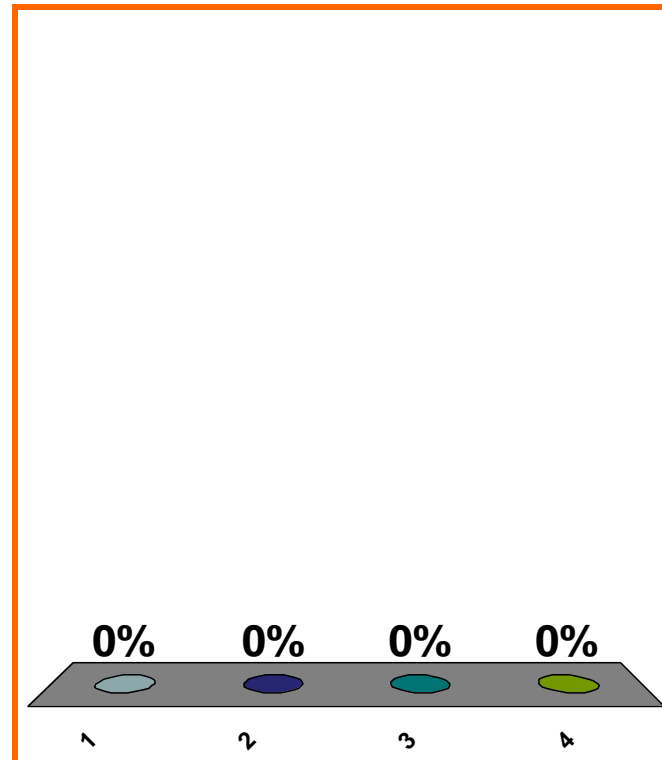
$$\sin x \underset{x \rightarrow 0}{\sim} ??$$

(a) x

(b) $\cos x$

(c) $-\cos x$

(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

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Topic 0230

0 pts

22

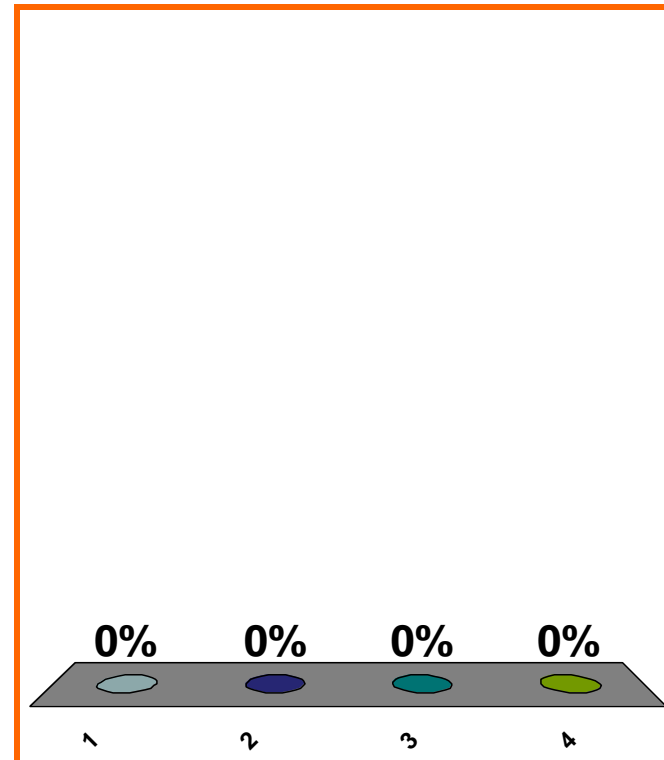
$$\lim_{x \rightarrow 2} \left((\sin x) + \sqrt{x + 1} \right)$$

(a) DNE

(b) $-\infty$

(c) $(\sin 2) + \sqrt{3}$

(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

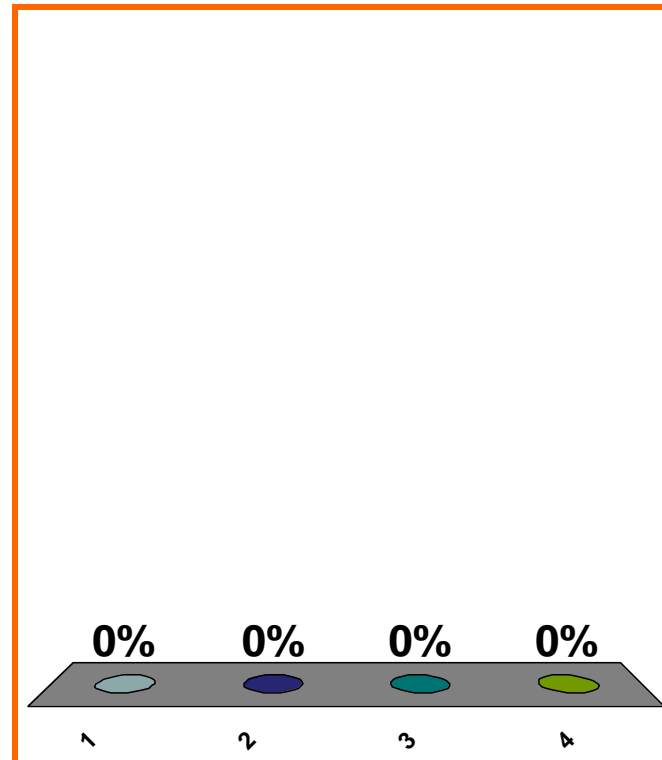
$$4x^5 - 3x^3 + 8x^2 \quad x \rightarrow \infty \quad ??$$

(a) $4x^5$

(b) $8x^2$

(c) 8

(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

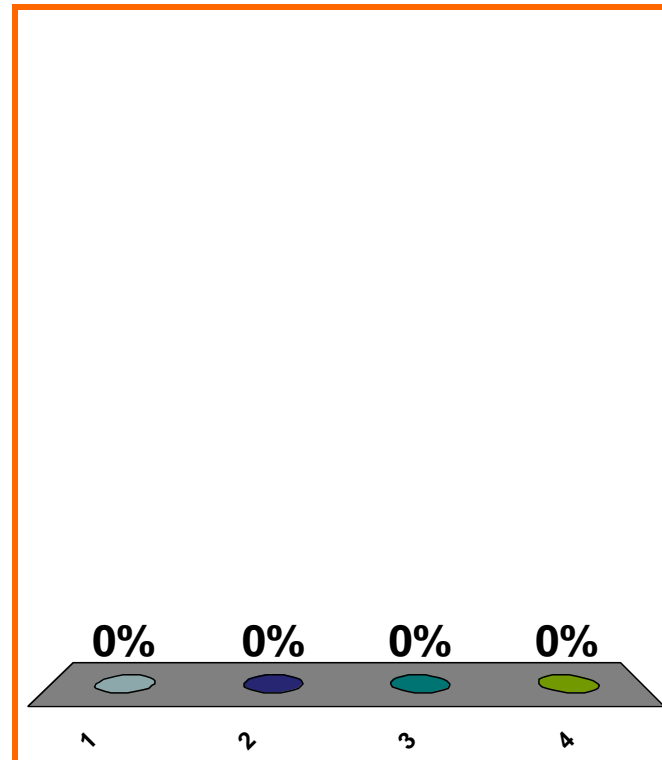
$$\lim_{x \rightarrow \infty} x e^{-x} = \lim_{x \rightarrow \infty} ?? \stackrel{\text{L'H}}{=} \dots$$

(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
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

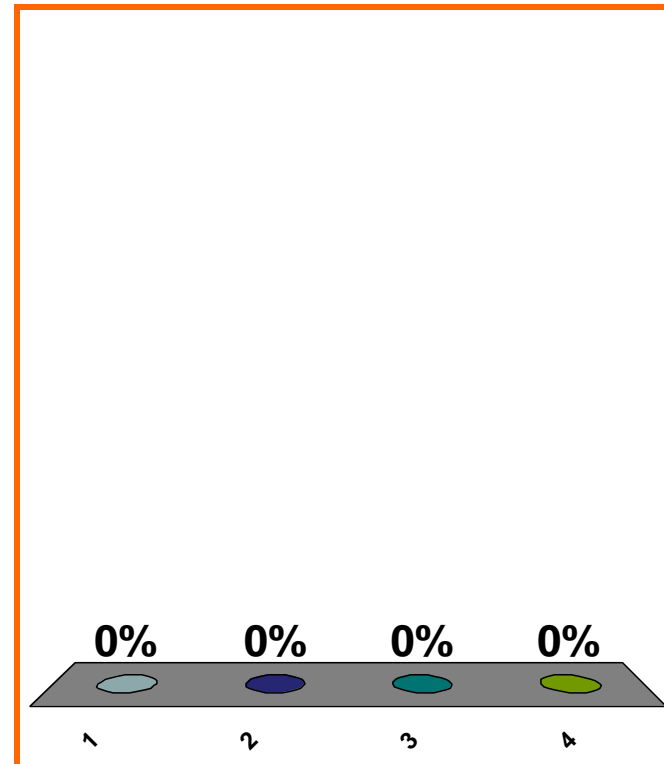
$$\ln(1 + (3/n)) \quad n \xrightarrow{\sim} \infty \quad ??$$

(a) $1/n^2$

(b) 1

(c) $3/n$

(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

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

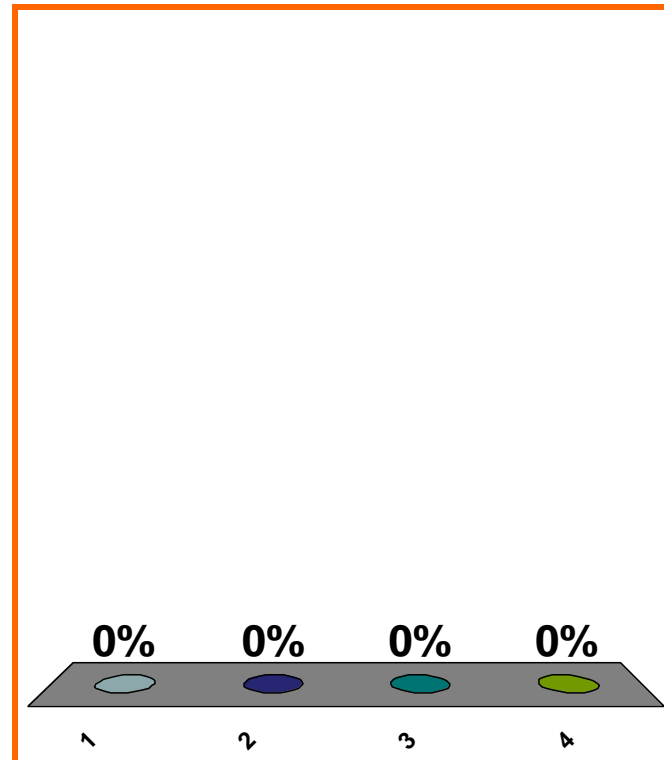
$$\lim_{n \rightarrow \infty} n[\ln(1 + (3/n))] = ??$$

(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
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

0 pts

27

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

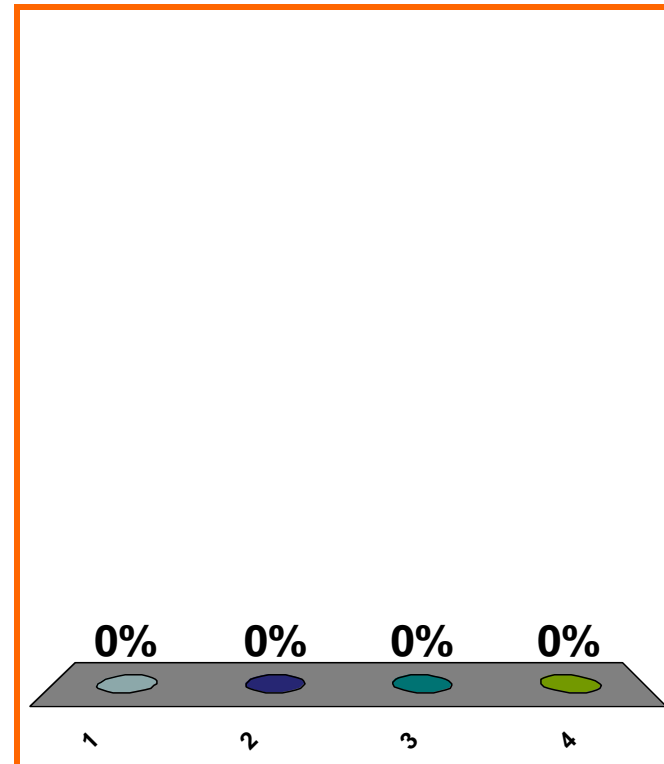
$x \rightarrow 0$

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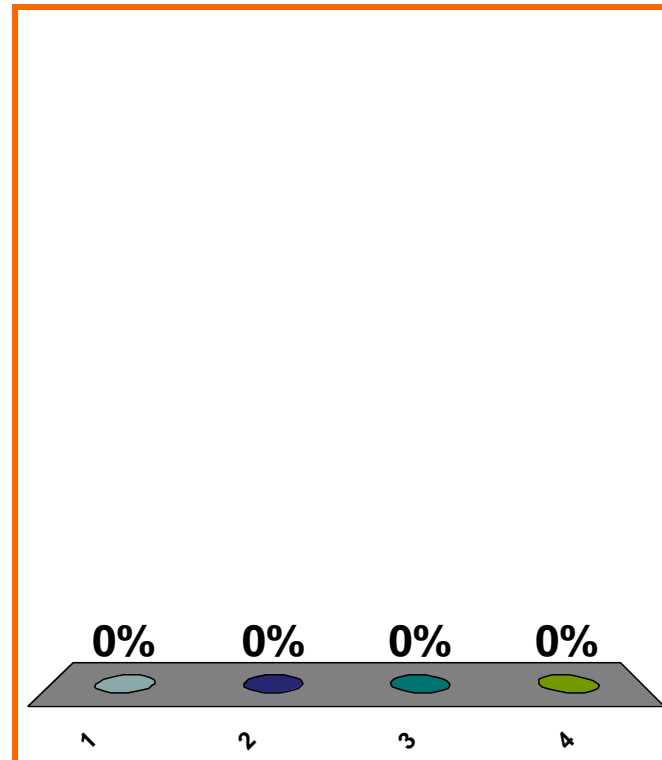
$$\ln(1 + 5x + 4x^2) \quad x \sim 0 \quad ??$$

(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

Principle of log diff:

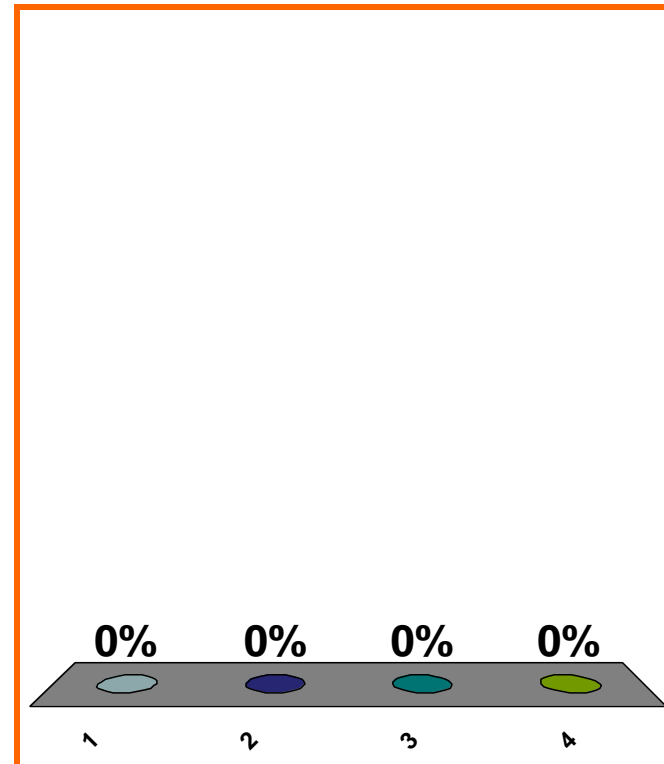
$$f'(x) = ??$$

(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

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

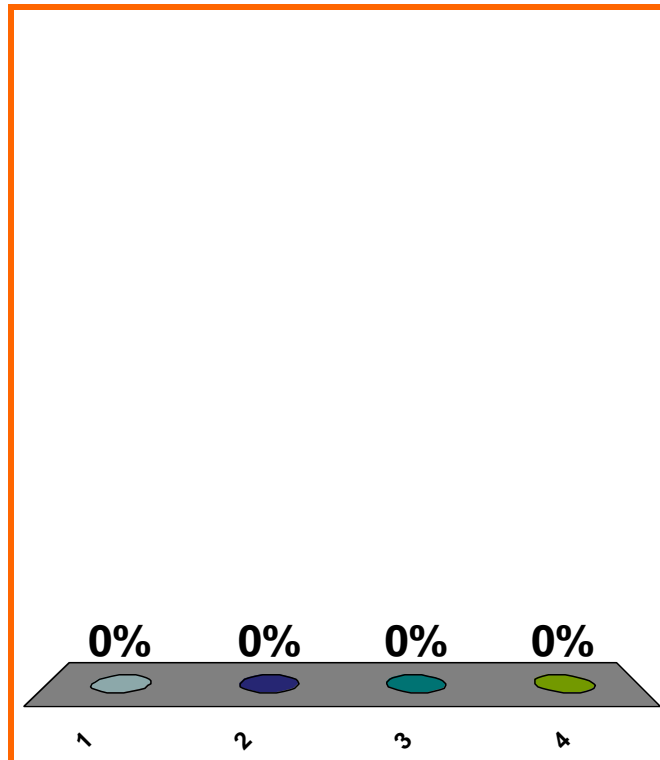
i.e., solve $10^{??} = 7$.

(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

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precalc

0 pts

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

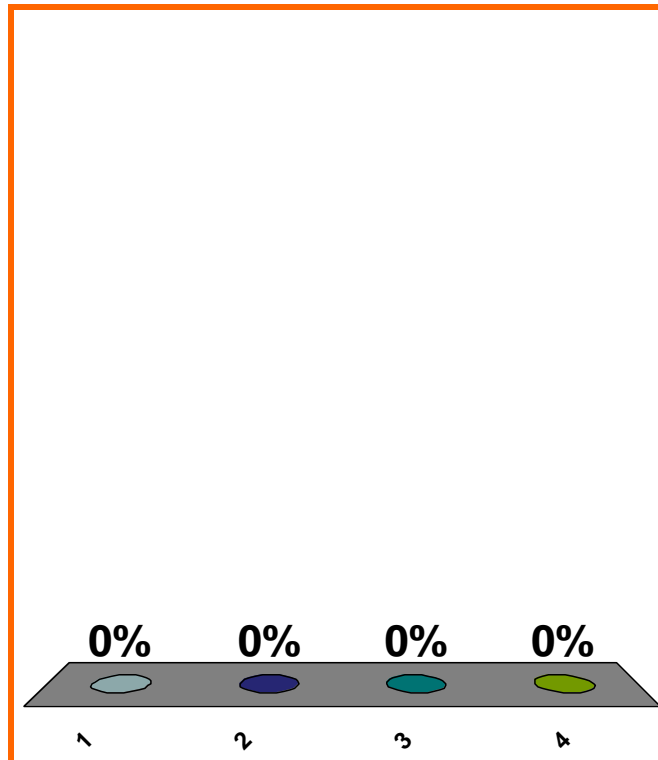
i.e., solve $10^{??} = x$.

(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

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precalc

0 pts

32

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

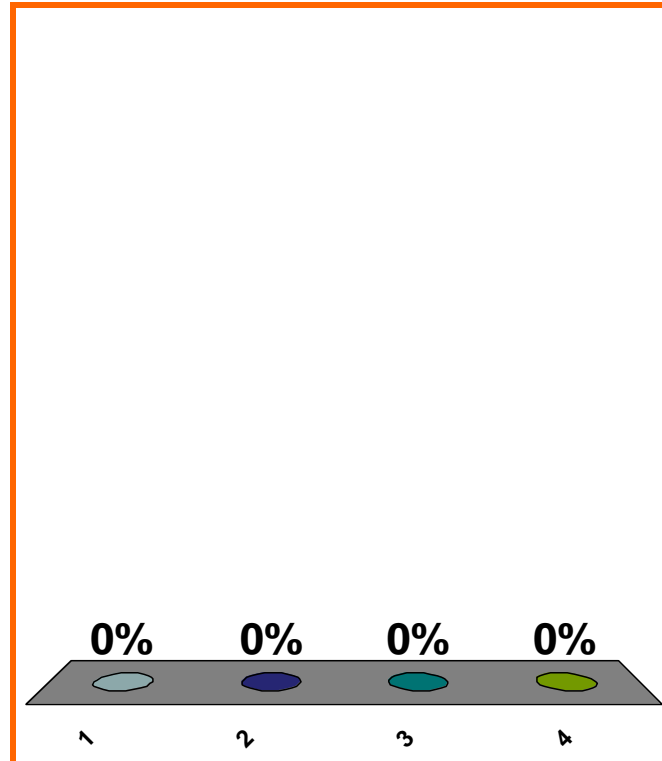
$$\frac{d}{dx} [\log_{10}(x)] = ?? \quad x > 0$$

(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

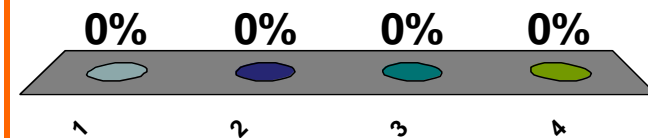
$$\lim_{x \rightarrow 0} \left[\frac{e^{2x} - 1}{\ln(1 + x)} \right] \stackrel{\text{L'H}}{=} \lim_{x \rightarrow 0} [??]$$

(a)
$$\frac{[\ln(1 + x)][2e^{2x}] - [e^{2x} - 1][1/(1 + x)]}{[\ln(1 + x)]^2}$$

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

(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
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

34

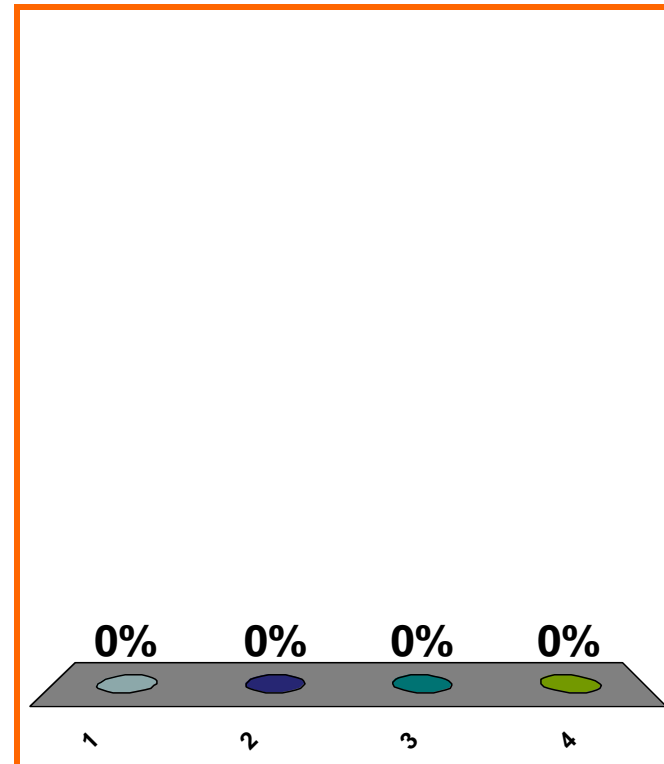
$$\lim_{x \rightarrow \infty} \left[\frac{\sin x}{x} \right] \stackrel{\text{L'H}}{=} \lim_{x \rightarrow \infty} [??]$$

(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
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

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

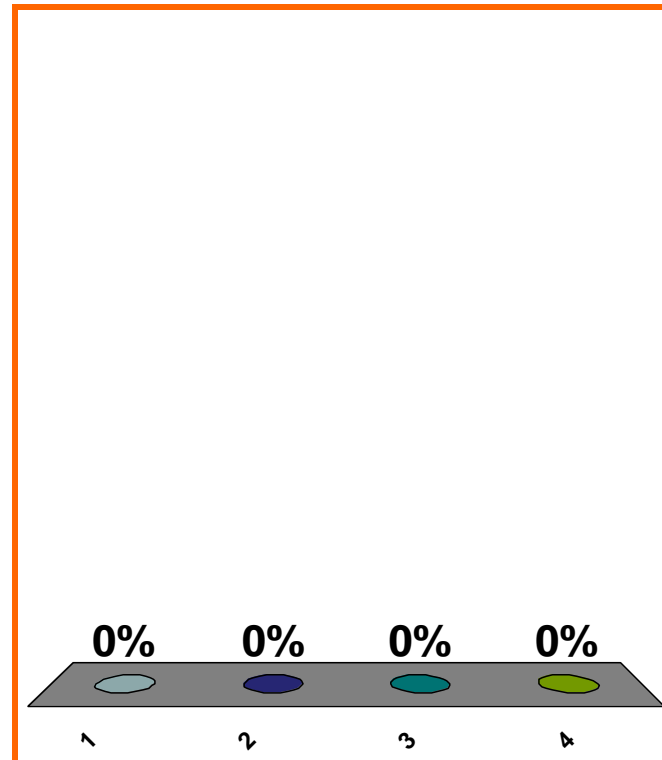
$$(a) \lim_{x \rightarrow \infty} \frac{(e^x)(1) - (x)(e^x)}{e^{2x}}$$

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

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

(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

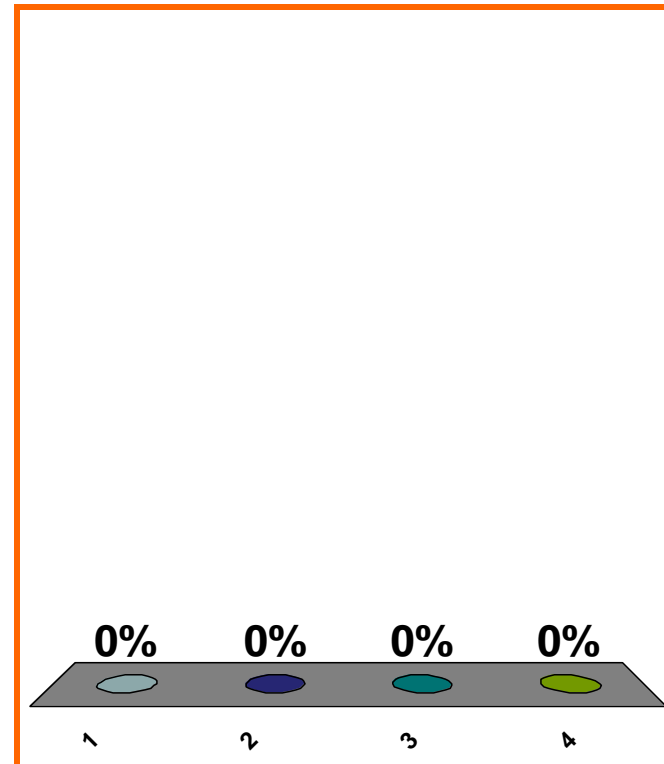
$$\lim_{x \rightarrow 0} \frac{e^x - 1 - x}{x^2} = ??$$

(a) ∞

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

(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

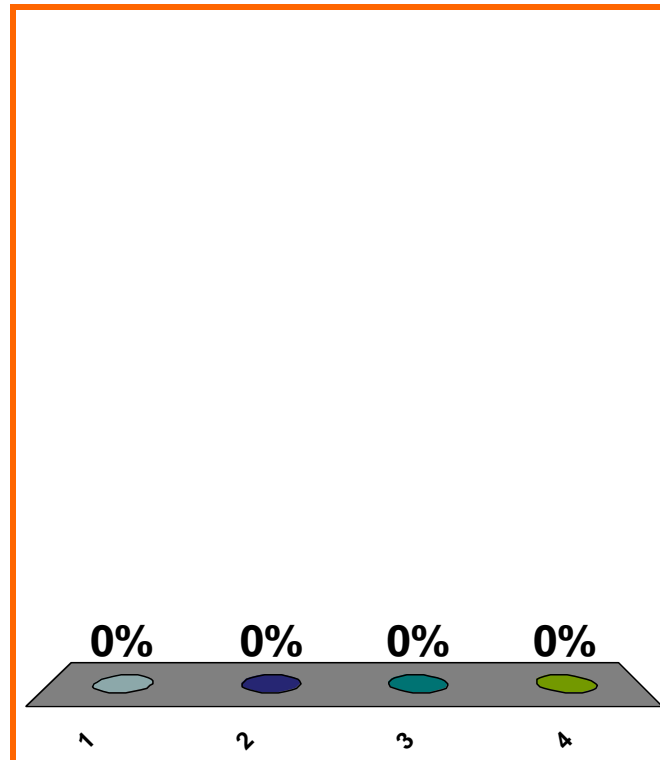
$$\lim_{x \rightarrow 0} \frac{e^x - 1 - x}{x^2} \stackrel{\text{L'H}}{=} \lim_{x \rightarrow 0} \frac{e^x - 1}{2x} = ??$$

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

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

(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

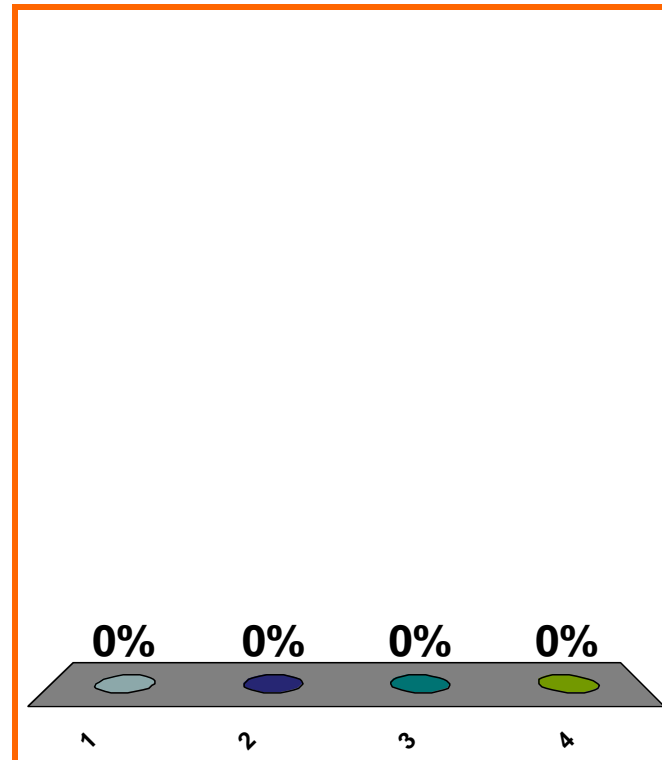
$$\lim_{x \rightarrow 0} \frac{e^x - 1 - x}{x^2} \stackrel{\text{L'H}}{=} \lim_{x \rightarrow 0} \frac{e^x - 1}{2x} \stackrel{\text{L'H}}{=} \lim_{x \rightarrow 0} \frac{e^x}{2} = ??$$

(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

SAVE THE
SESSION
DATA

RETURN TO
PRESENTATION