

# Calculus

F 29 March 2013

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

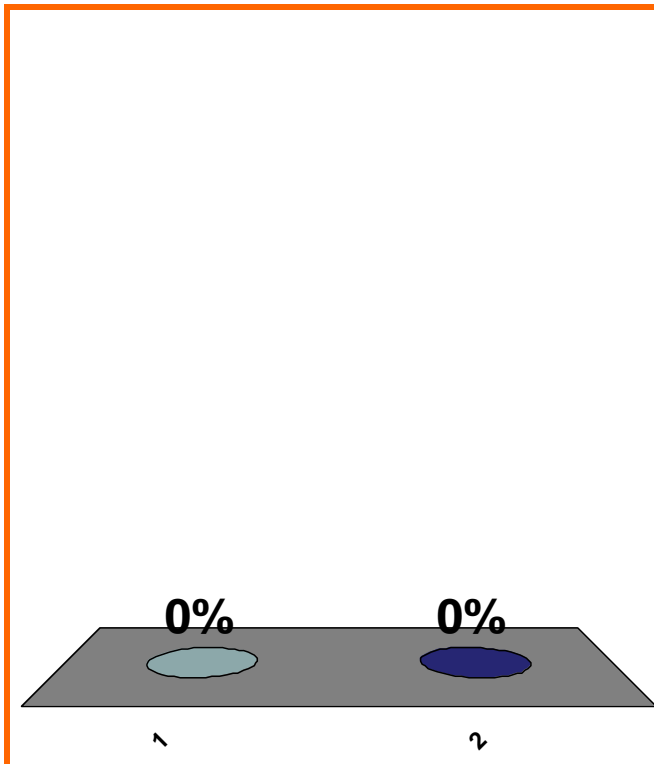
Topics covered are in bounds

QUIZ  
FOLLOWS

$$1 + 1 = ??$$

(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										

0 of 5

arithmetic

0 pts

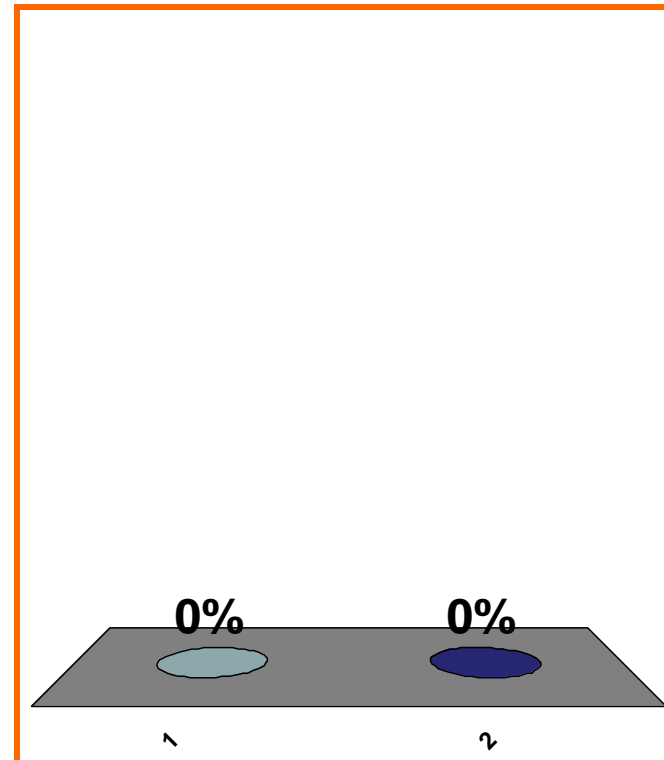
5

T or F:

At **any** critical number is  
a local max or a local min.

(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

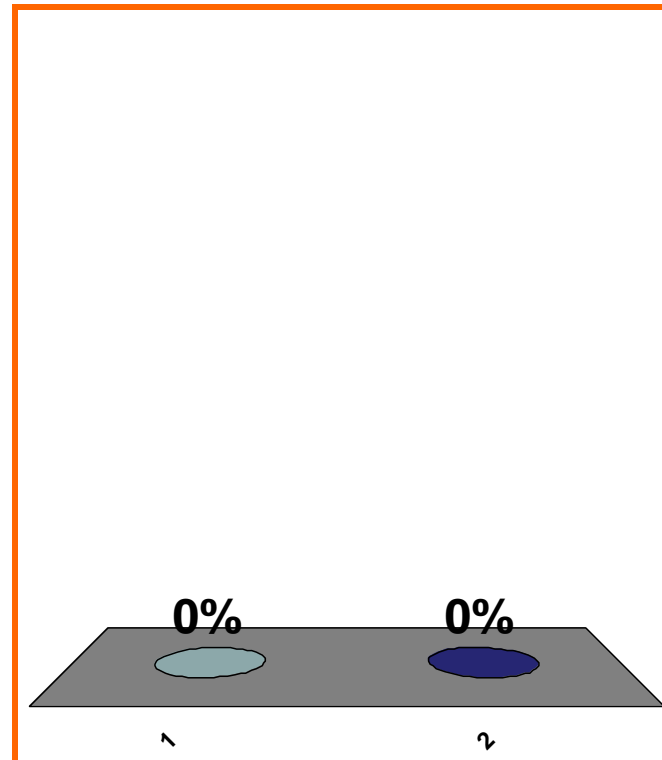
T or F:

$f$  incr. on  $(2, 3)$

$\Rightarrow f' \geq 0$  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

0 of 5

Topic 0460

10 pts

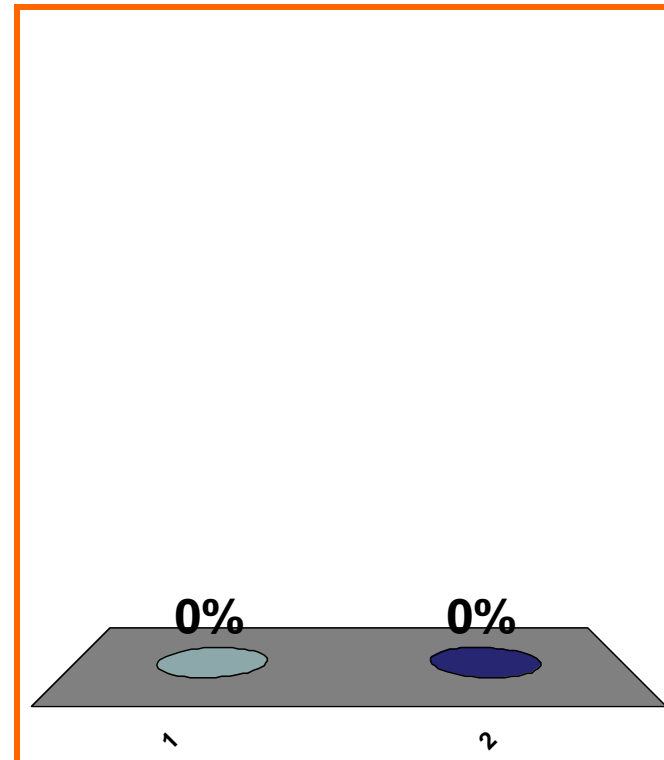
7

T or F:

If  $f$  is decreasing on  $I$ ,  
then  $f' < 0$  on  $I$ .

(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

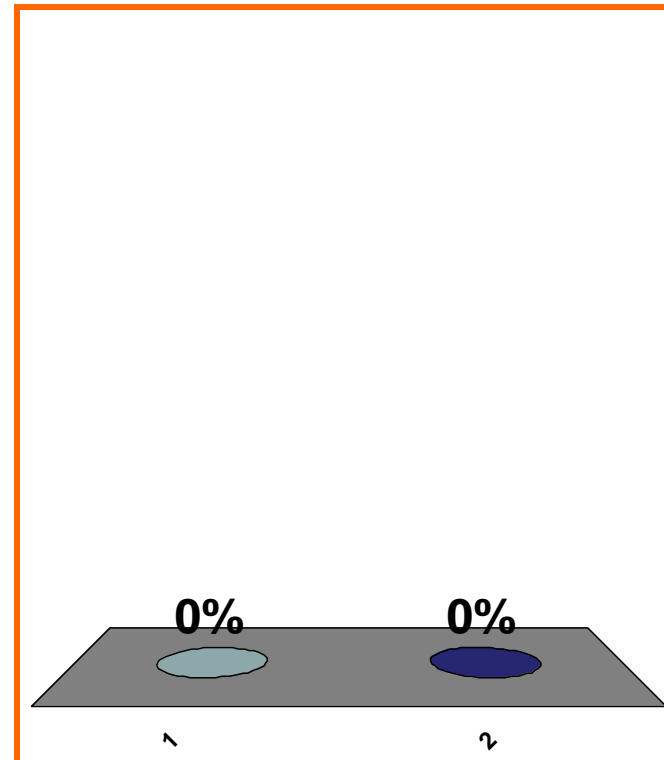


T or F:

If  $f$  is cc up on  $I$ ,  
then  $f'' > 0$  on  $I$ .

(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

Newton's method  
for solving  $e^{2x} + x = 4$ :

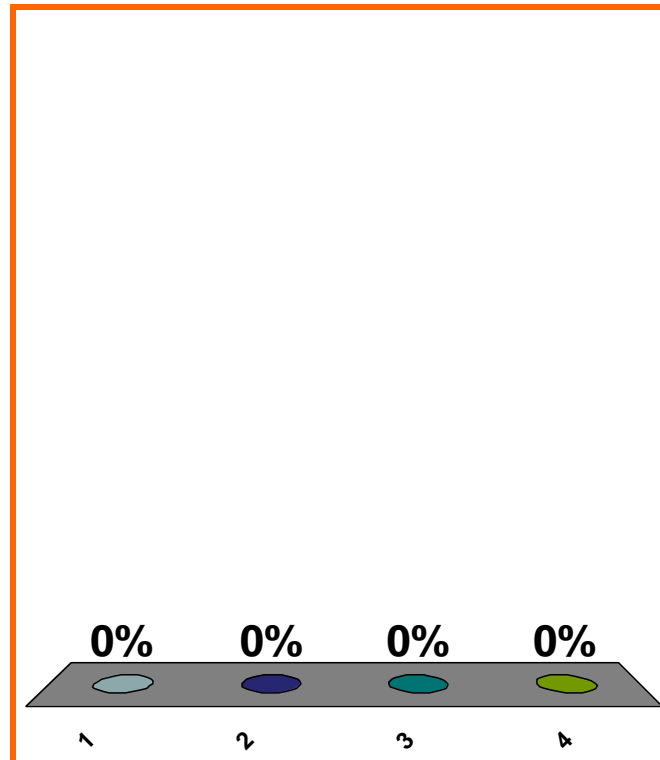
$$x_{n+1} = ??$$

$$(a) \quad x_n - \frac{e^{2x_n} + x_n - 4}{e^{2x_n} + 1}$$

$$(b) \quad x_n - \frac{e^{2x_n} + x_n}{e^{2x_n} + 1}$$

$$(c) \quad x_n - \frac{e^{2x_n} + x_n - 4}{2e^{2x_n} + 1}$$

(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

Newton's method  
for solving  $e^{5x} + x^2 = 7$ :

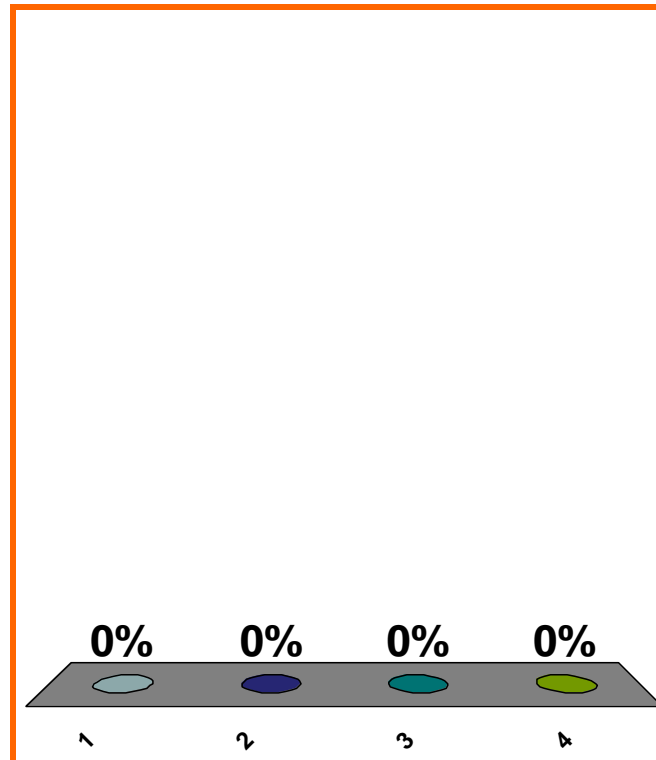
$$x_{n+1} = ??$$

(a)  $x_n - \frac{e^{5x_n} + x_n^2}{e^{5x_n} + 2x_n}$

(b)  $x_n - \frac{e^{5x_n} + x_n^2 - 7}{5e^{5x_n} + 2x_n}$

(c)  $x_n - \frac{e^{5x_n} + x_n^2 - 7}{e^{5x_n} + 2x_n}$

(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

Newton's method  
for solving  $f(x) = 5$ :

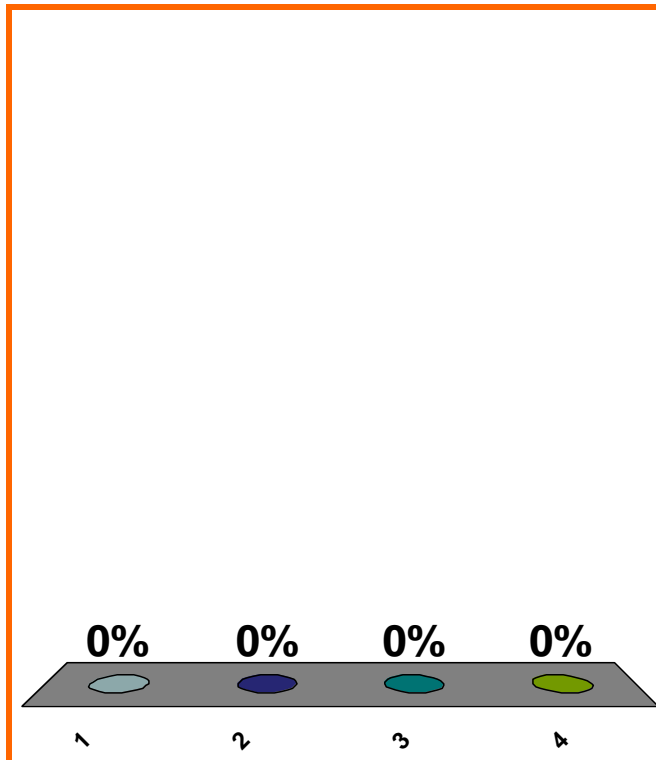
$$x_{n+1} = ??$$

$$(a) \quad x_n - \frac{[f(x_n)] - 5}{f'(x_n)}$$

$$(b) \quad x_n - \frac{[f(x_n)] - 1}{f'(x_n)}$$

$$(c) \quad x_n - \frac{f'(x_n)}{f(x_n)}$$

(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

END  
QUIZ

END  
CLASS

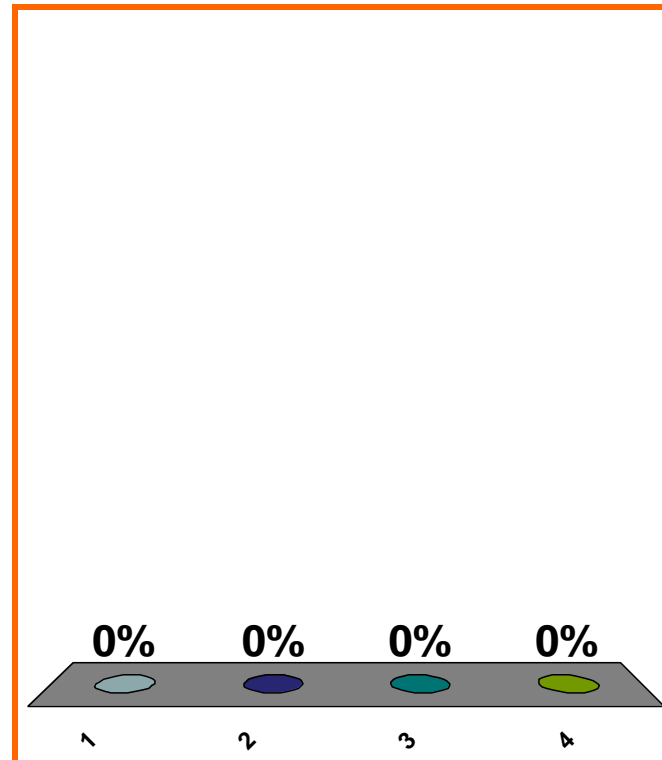
Newton's method formula to solve  $2x^3 - 4x + 8 = 0$ .

$$(a) \quad x_{n+1} = x_n - \frac{2x_n^3 - 4x_n + 8}{6x_n^2 - 4}$$

$$(b) \quad x_{n+1} = x_n + \frac{6x_n^2 - 4}{2x_n^3 - 4x_n + 8}$$

$$(c) \quad x_{n+1} = x_n - \frac{6x_n^2 - 4}{2x_n^3 - 4x_n + 8}$$

(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

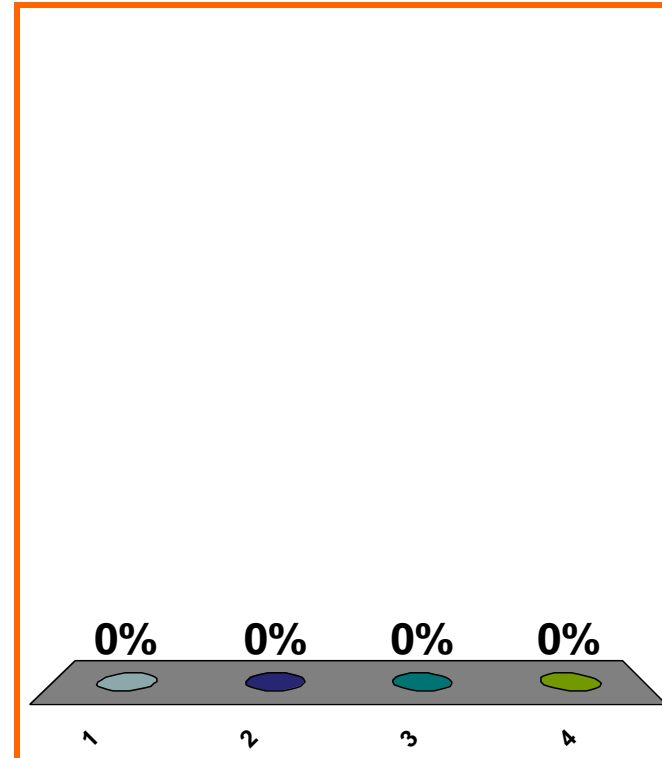
Newton's method formula to solve  $2e^x + x^2 - 8 = 0$ .

(a)  $x_{n+1} = x_n - \frac{2x_n e^{x_n-1} + 2x_n}{2e^{x_n} + x_n^2 - 8}$

(b)  $x_{n+1} = x_n - \frac{2e^{x_n} + x_n^2 - 8}{2x_n e^{x_n-1} + 2x_n}$

(c)  $x_{n+1} = x_n - \frac{2e^{x_n} + x_n^2 - 8}{2e^{x_n} + 2x_n}$

(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



Newton's method  
for solving  $e^x + x = 1$ :

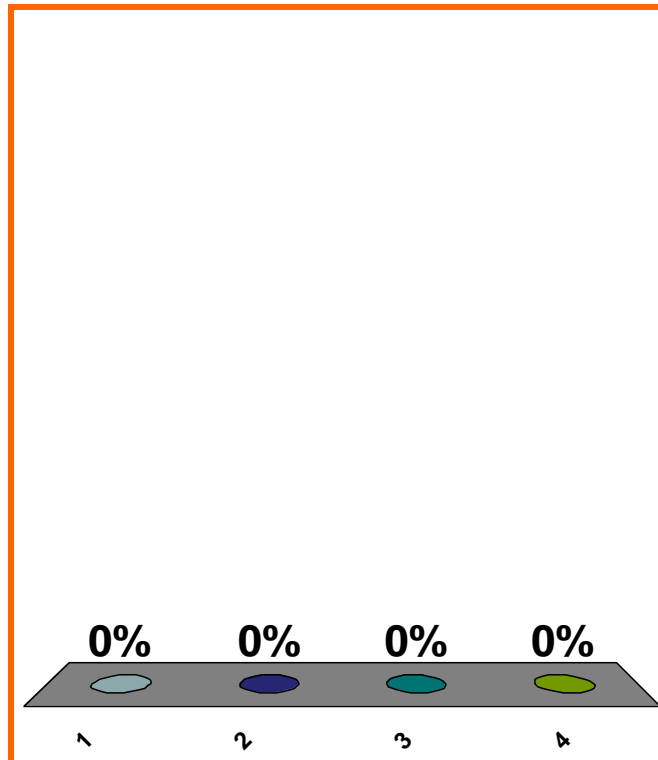
$$x_{n+1} = ??$$

$$(a) \quad x_n - \frac{e^{x_n} + x_n}{e^{x_n} + 1}$$

$$(b) \quad x_n - \frac{e^{x_n} + x_n - 1}{e^{x_n} + 1}$$

$$(c) \quad x_n - \frac{e^{x_n} + 1}{e^{x_n} + x_n}$$

(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

Newton's method  
for solving  $e^x + x = 1$ :

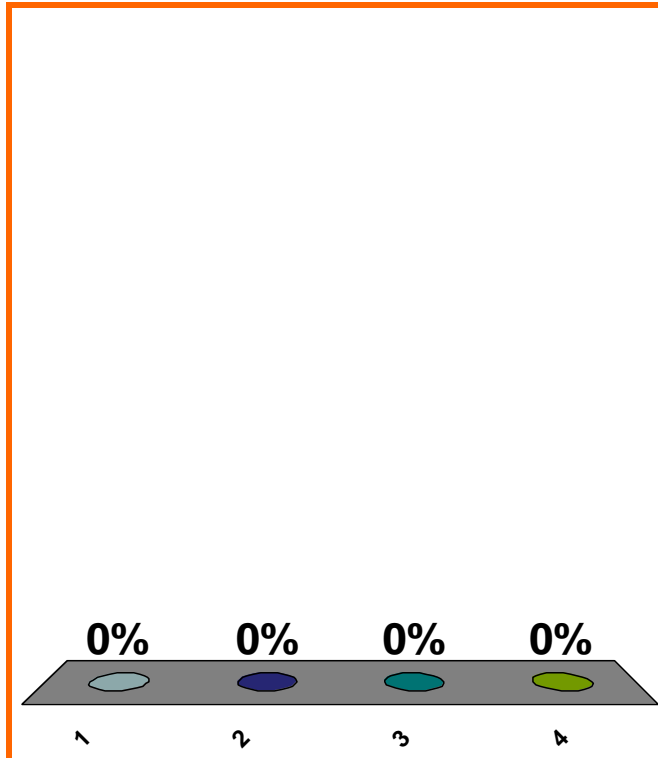
$$x_{n+1} = ??$$

$$(a) \quad x_n - \frac{e^{x_n} + x_n - 1}{e^{x_n} + 1}$$

$$(b) \quad x_n - \frac{e^{x_n} + x_n}{e^{x_n} + 1}$$

$$(c) \quad x_n - \frac{e^{x_n} + 1}{e^{x_n} + x_n}$$

(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

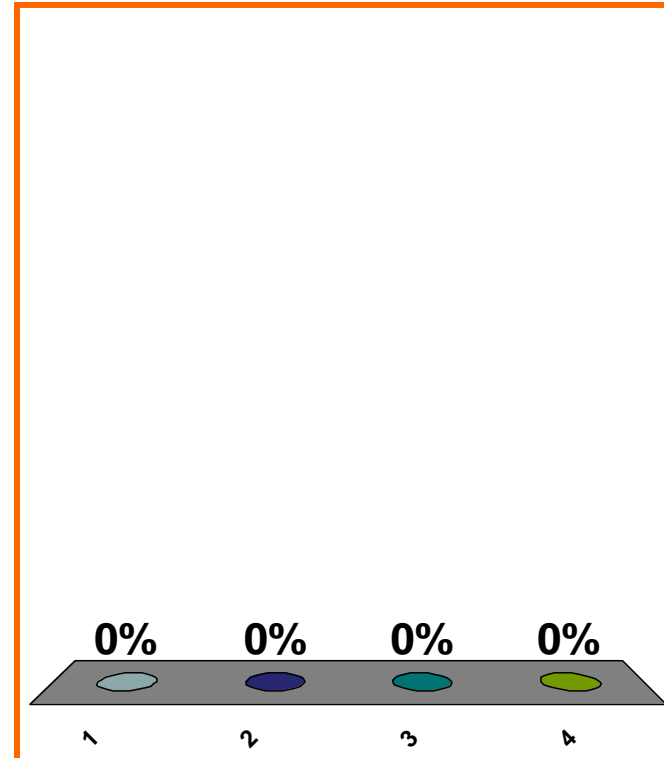
Newton's method formula to solve  $(\cos x) + x^3 - 4 = 0$ .

(a)  $x_{n+1} = x_n - \frac{(\sin x_n) + 3x_n^2}{(\cos x_n) + x_n^3 - 4}$

(b)  $x_{n+1} = x_n - \frac{(\cos x_n) + x_n^3 - 4}{(\sin x_n) + 3x_n^2}$

(c)  $x_{n+1} = x_n - \frac{(\cos x_n) + x_n^3 - 4}{-(\sin x_n) + 3x_n^2}$

(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

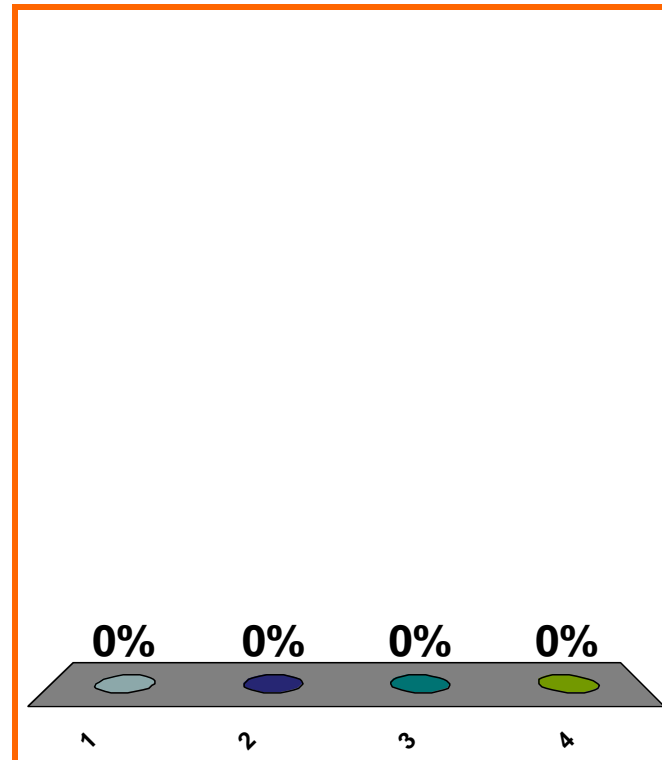
Newton's method formula  
to solve  $x^3 + x^2 - 4 = 0$ .

(a)  $x_{n+1} = x_n - \frac{3x_n^2 + 2x_n}{x_n^3 + x_n^2 - 4}$

(b)  $x_{n+1} = x_n + \frac{3x_n^2 + 2x_n}{x_n^3 + x_n^2 - 4}$

(c)  $x_{n+1} = x_n - \frac{x_n^3 + x_n^2 - 4}{3x_n^2 + 2x_n}$

(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

Newton's method formula  
to solve  $x^5 + x^3 = 4$ .

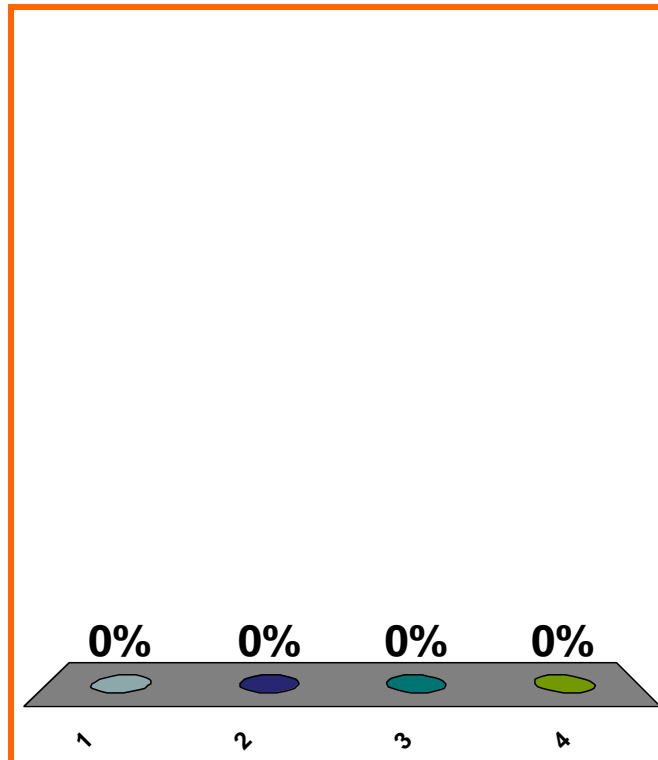
(a)  $x_{n+1} = x_n + \frac{x_n^5 + x_n^3}{5x_n^4 + 3x_n^2}$

(b)  $x_{n+1} = x_n + \frac{5x_n^4 + 3x_n^2}{x_n^5 + x_n^3}$

(c)  $x_{n+1} = x_n - \frac{x_n^5 + x_n^3}{5x_n^4 + 3x_n^2}$

(d) none of the above

Correct:  $x_{n+1} = x_n - \frac{x_n^5 + x_n^3 - 4}{5x_n^4 + 3x_n^2}$



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

Newton's method  
for solving  $f(x) = 1$ :

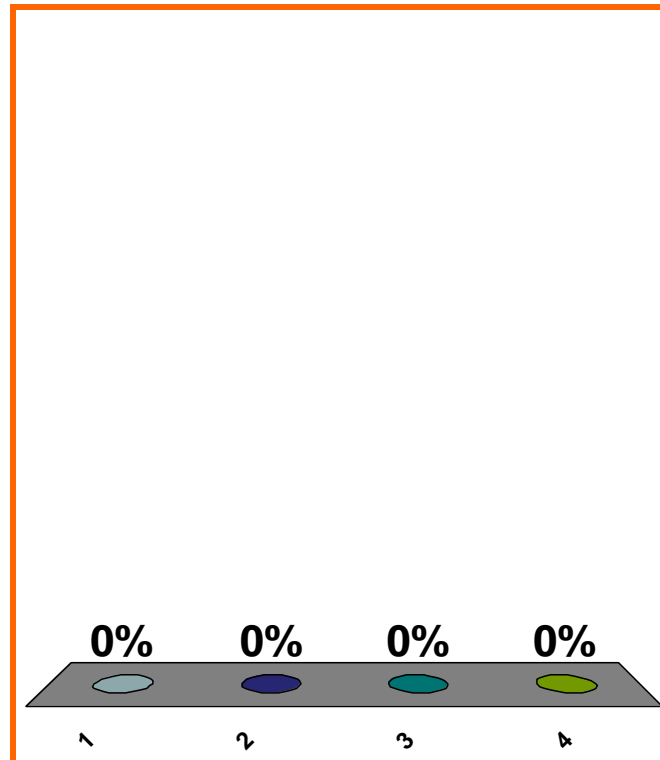
$$x_{n+1} = ??$$

(a)  $x_n - \frac{f(x_n)}{f'(x_n)}$

(b)  $x_n - \frac{[f(x_n)] - 1}{f'(x_n)}$

(c)  $x_n - \frac{f'(x_n)}{f(x_n)}$

(d) none of the above



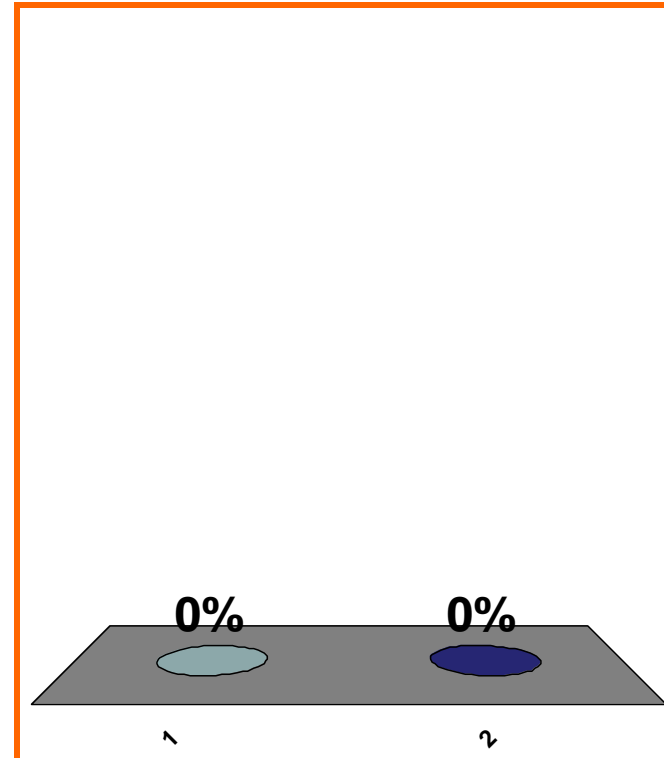
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

T or F:

Any global max or global min is at a critical number.

(a) True

(b) False



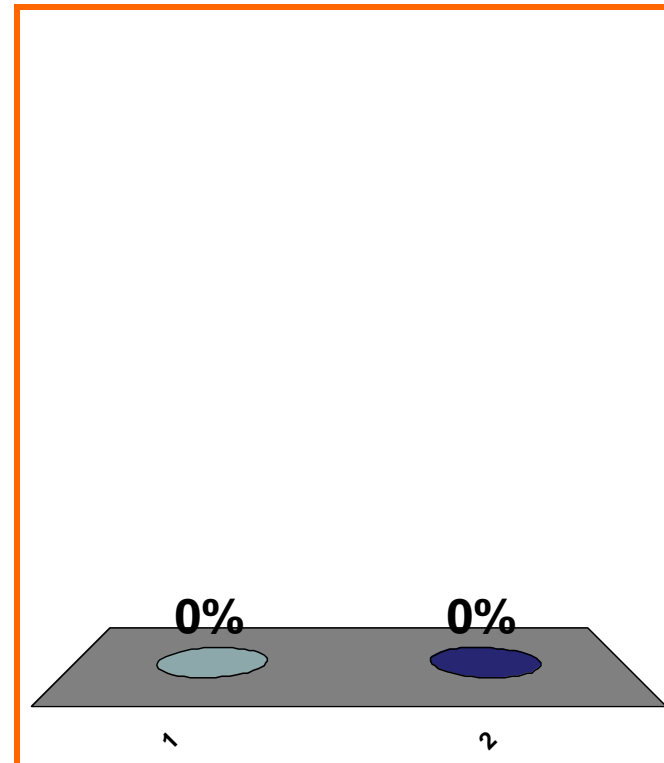
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

T or F:

Any global max is a local max.

(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

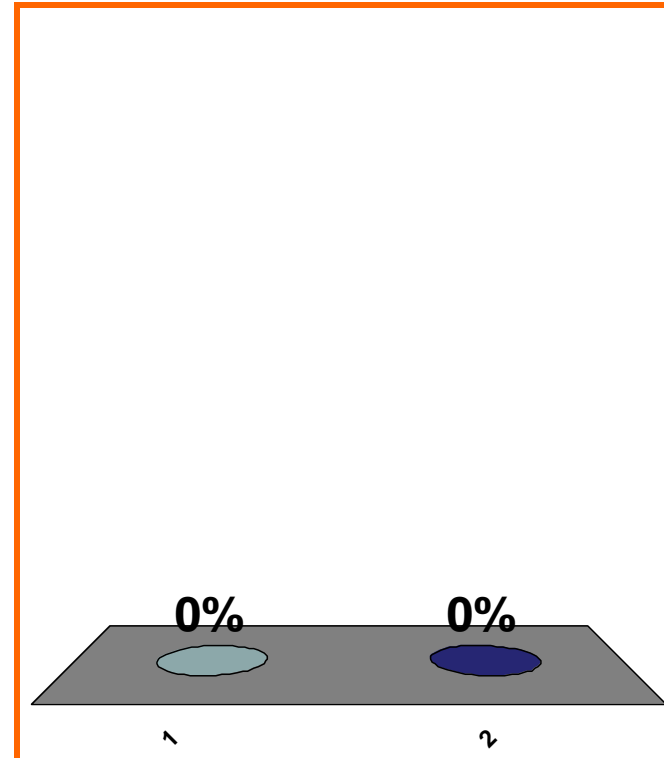


T or F:

If  $f' > 0$  on  $I$ ,  
then  $f$  is increasing on  $I$ .

(a) True

(b) False



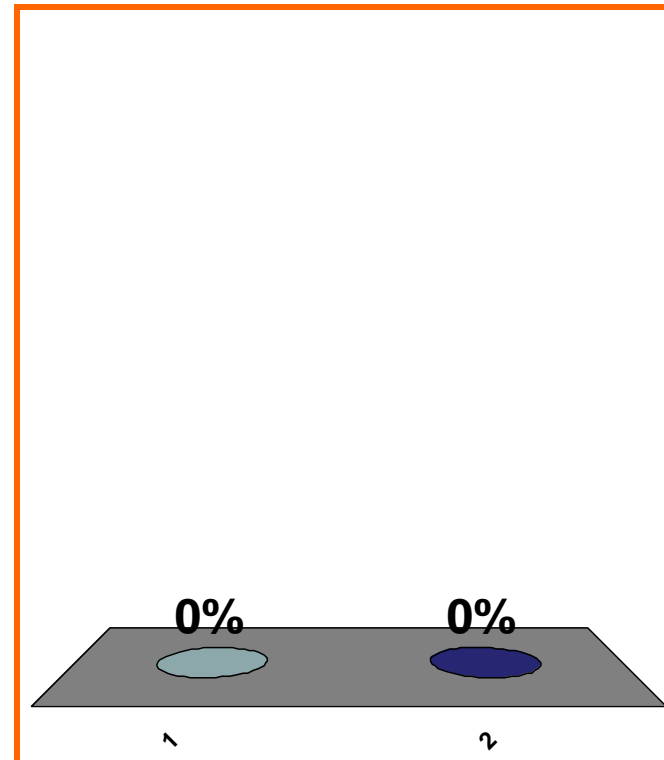
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21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

T or F:

If  $f'' < 0$  on  $I$ ,  
then  $f$  is cc dn on  $I$ .

(a) True

(b) False



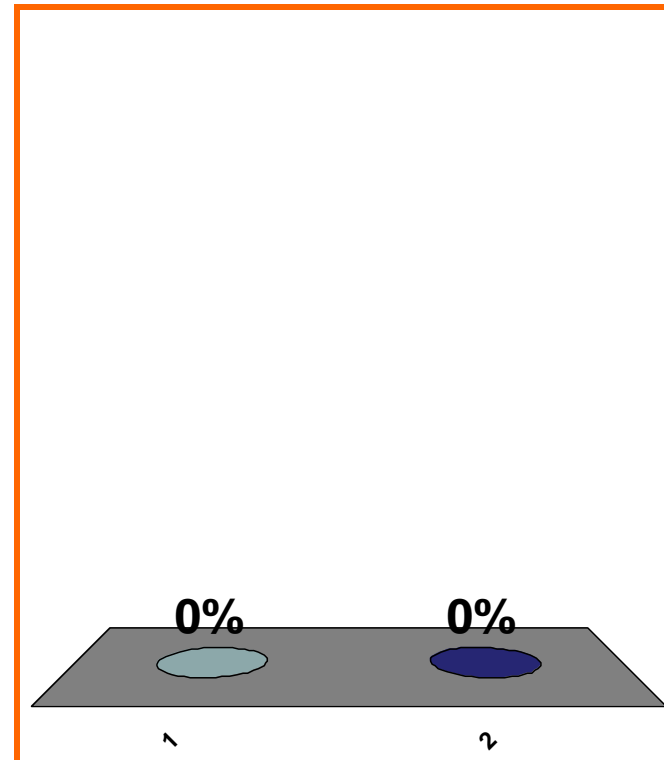
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

T or F:

Any local max is  
a global max.

(a) True

(b) False



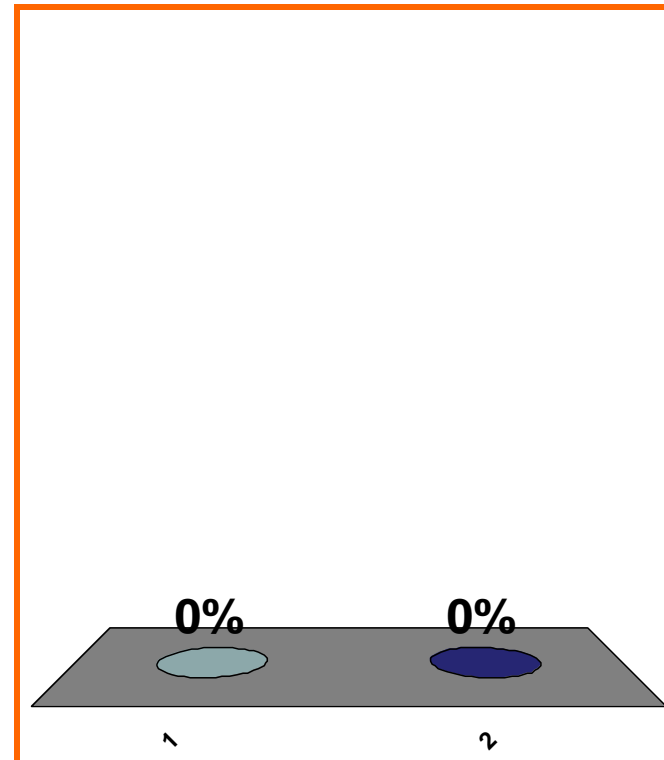
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

T or F:

Any local max or local min is at a critical number.

(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

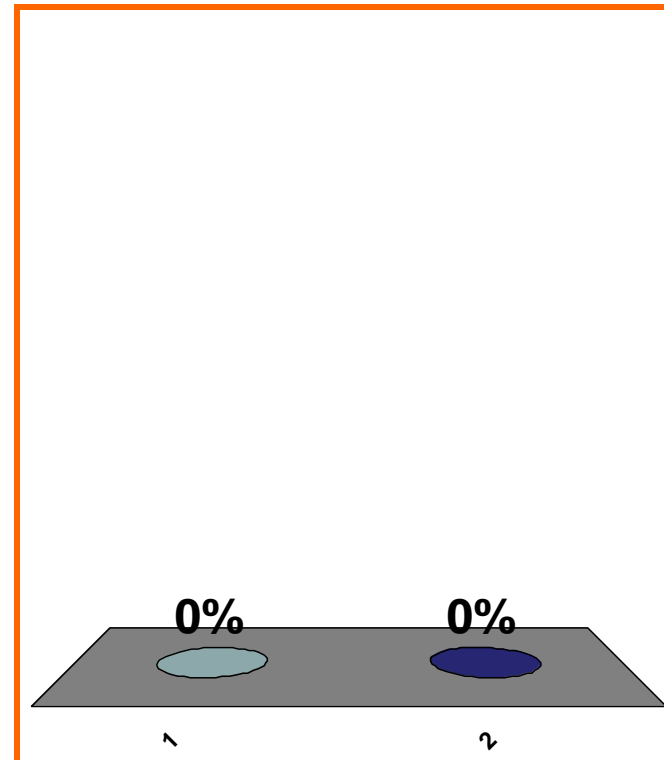
T or F:

$f$  incr. on  $(2, 3)$

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

(a) True

(b) False



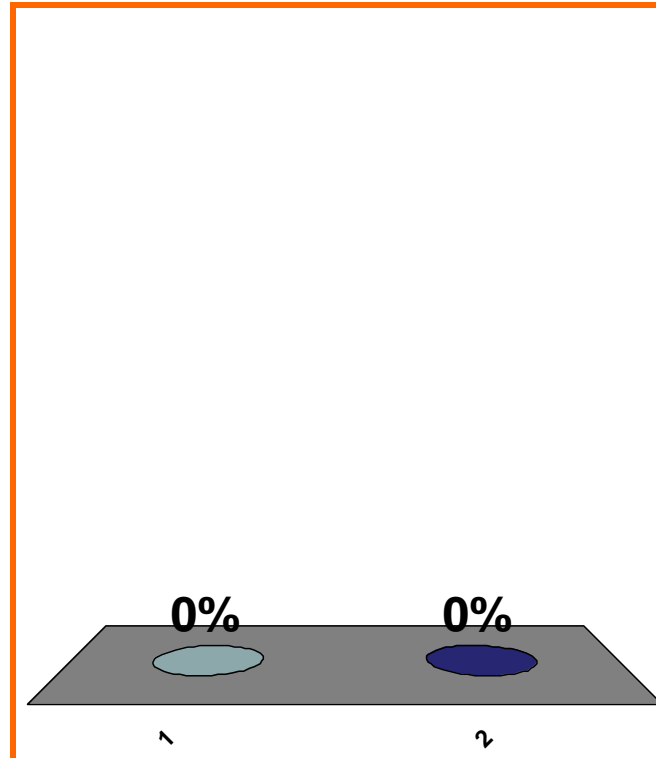
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

(a) True

(b) False



T or F:  
 $f$  incr. on  $(2, 3)$   
 $f$  diff. on  $(2, 3)$   
 $f' \geq 0$  on  $(2, 3)$



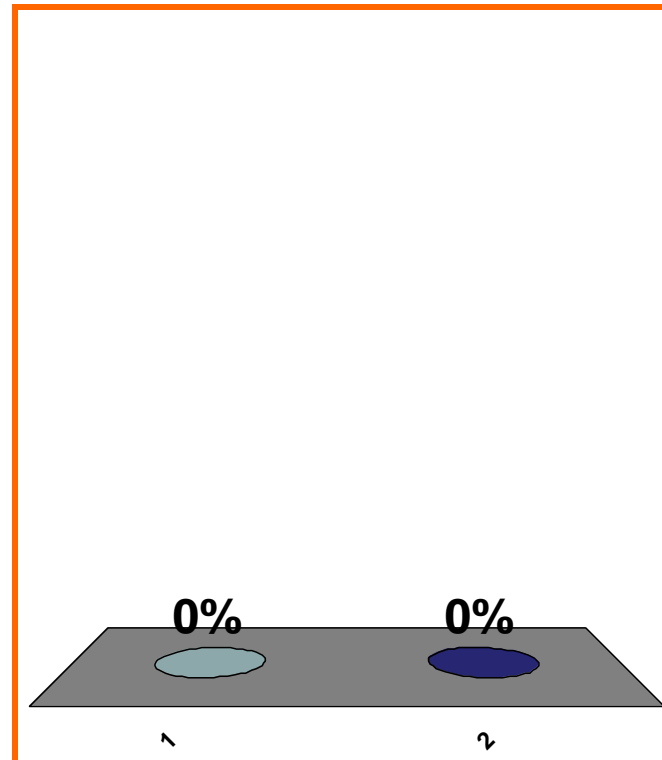
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

T or F:

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

(a) True

(b) False



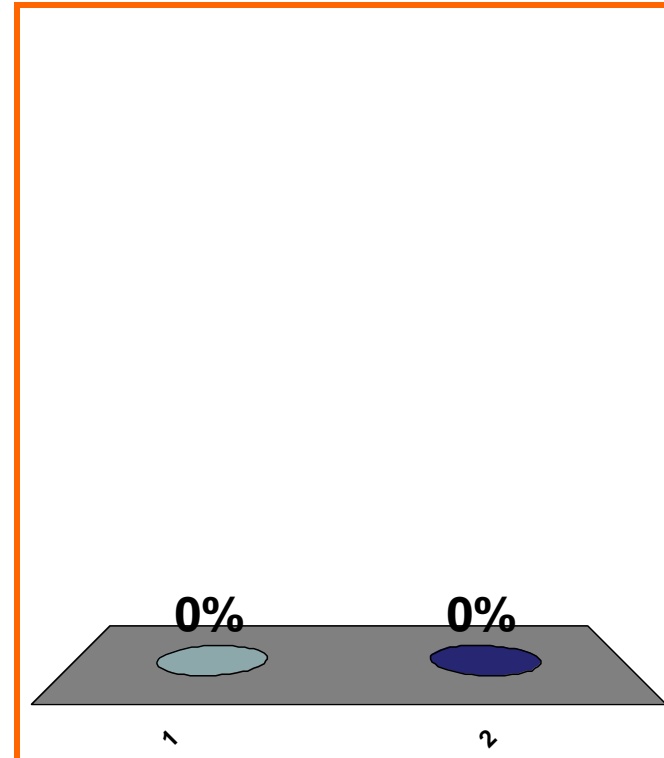
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

T or F:

If  $f$  is increasing on  $I$ ,  
then  $f' > 0$  on  $I$ .

(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

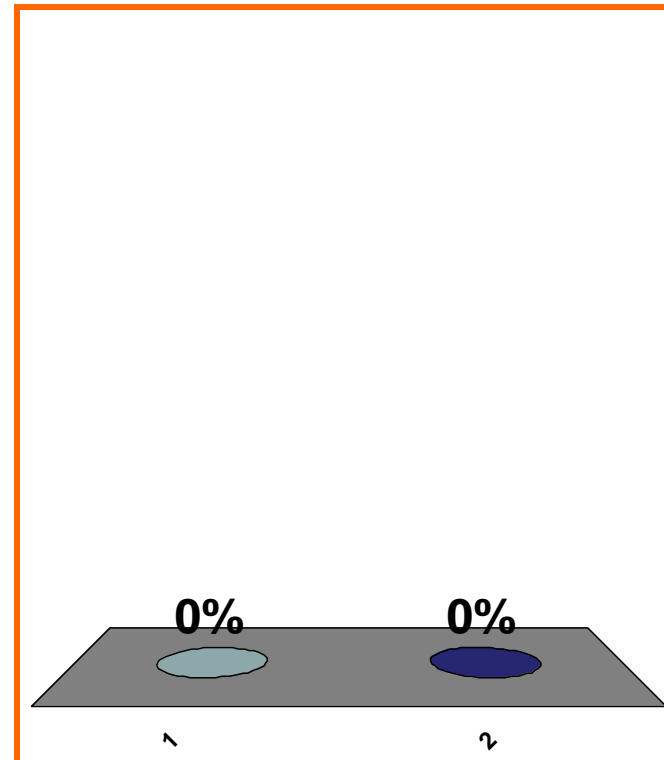


T or F:

If  $f' < 0$  on  $I$ ,  
then  $f$  is decreasing on  $I$ .

(a) True

(b) False



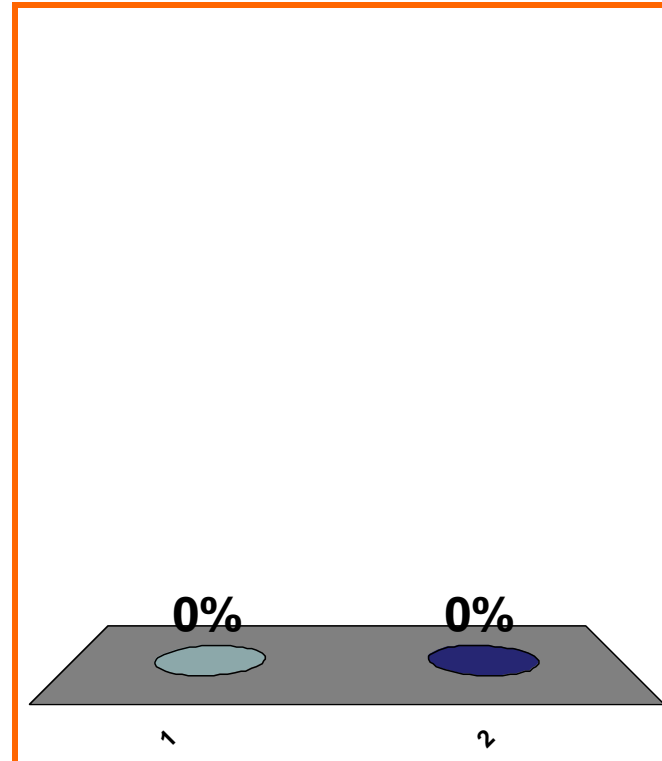
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

T or F:

If  $f'' > 0$  on  $I$ ,  
then  $f$  is cc up on  $I$ .

(a) True

(b) False



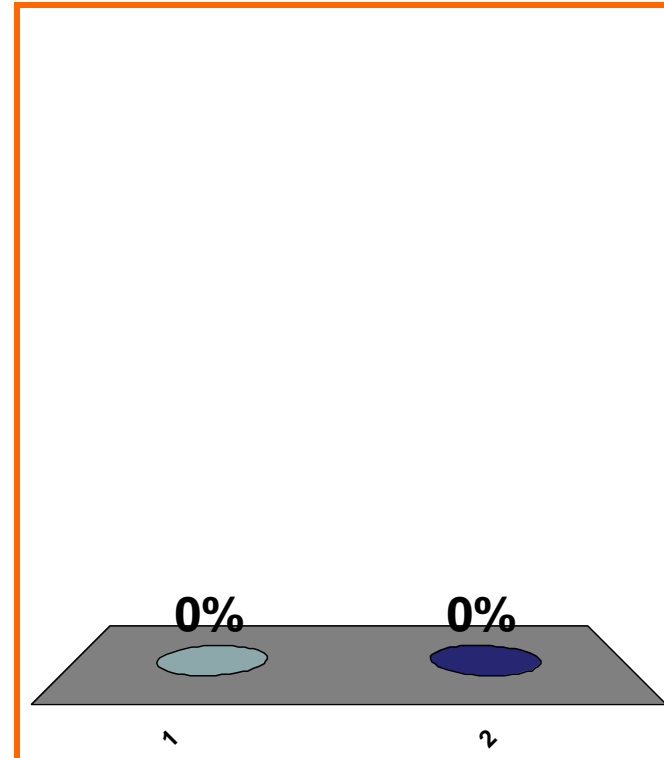
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

T or F:

If  $f$  is decreasing on  $I$ ,  
then  $f' < 0$  on  $I$ .

(a) True

(b) False



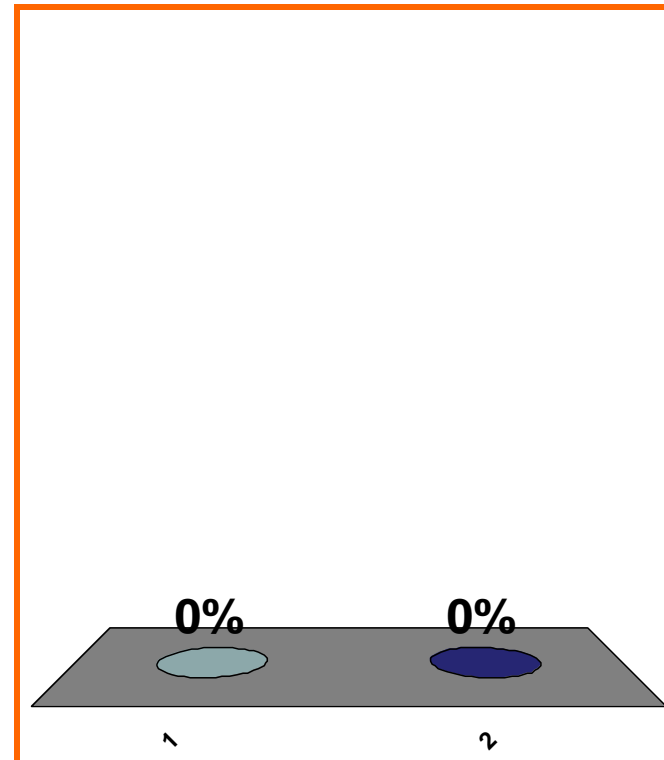
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

T or F:

If  $f$  is cc down on  $I$ ,  
then  $f'' < 0$  on  $I$ .

(a) True

(b) False



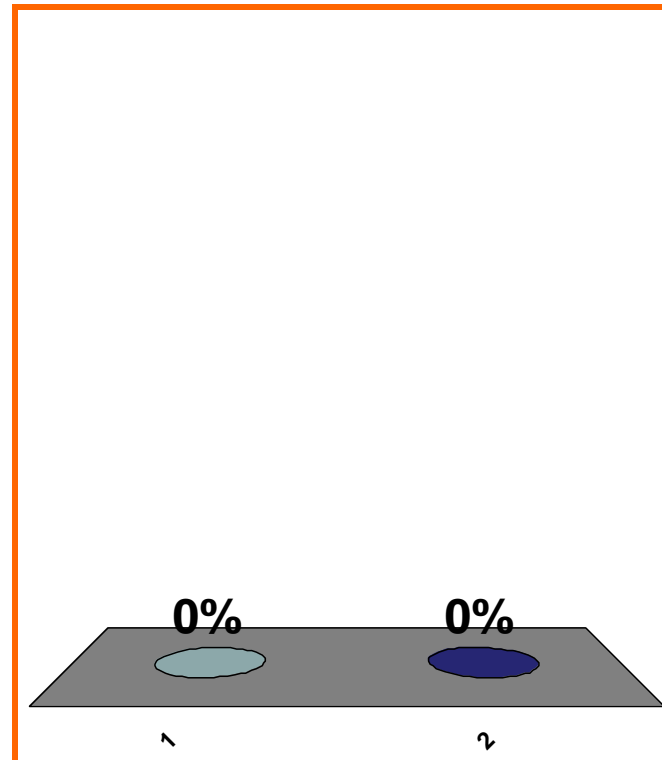
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

T or F:

If  $f'' > 0$  on  $I$ ,  
then  $f$  is cc dn on  $I$ .

(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

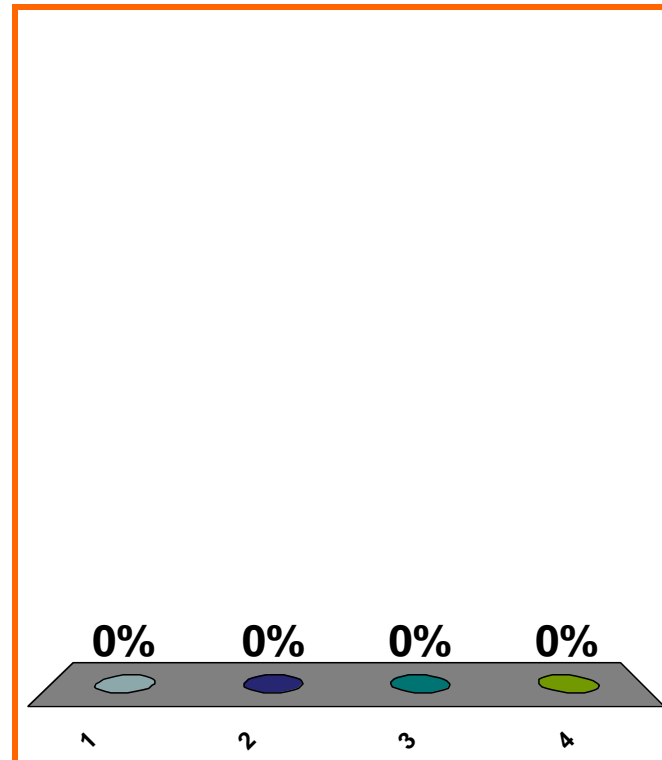
$$[d/dx][xe^y + y] = ??$$

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

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

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

(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										

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

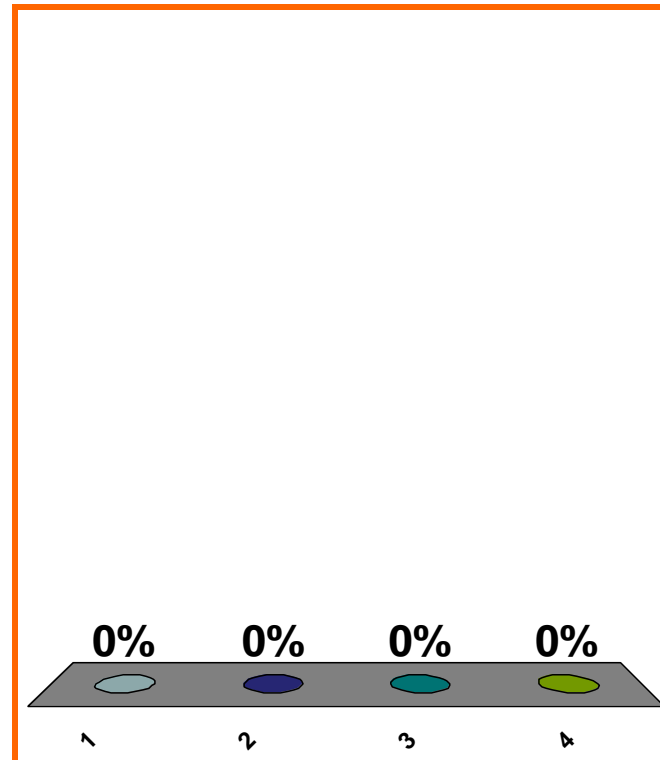
$$\begin{aligned}
 xe^y + y &= 1 \\
 y' &= ??
 \end{aligned}$$

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

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

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

(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										

SAVE THE  
SESSION  
DATA

RETURN TO  
PRESENTATION