

Calculus

M 10 September 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

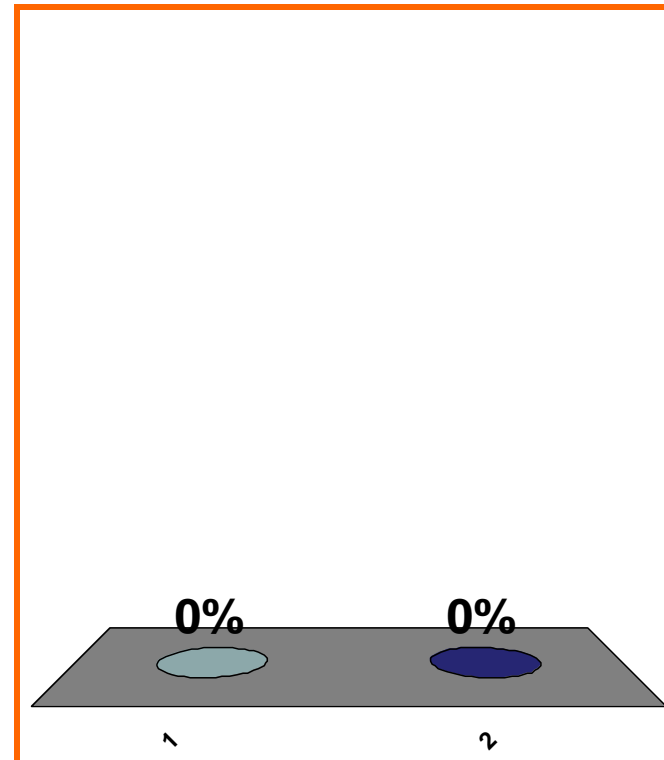
QUIZ
FOLLOWS

T or F:

$$\exists x \in \mathbb{Q} \text{ s.t. } x^2 = 2$$

(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										

0 of 5

Topic 0010

0 pts

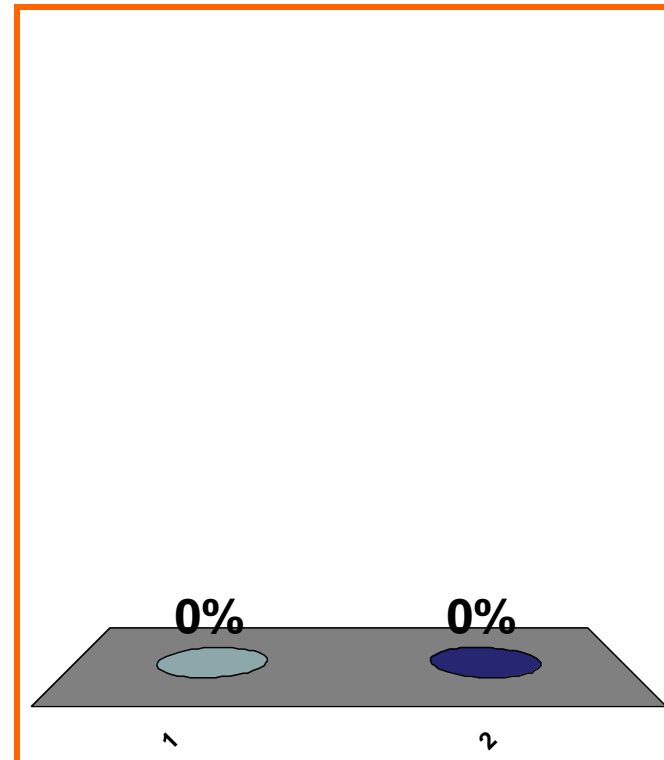
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T or F:

$$\forall x \in \mathbb{R}, \sqrt{x^2} = x$$

(a) True

(b) False



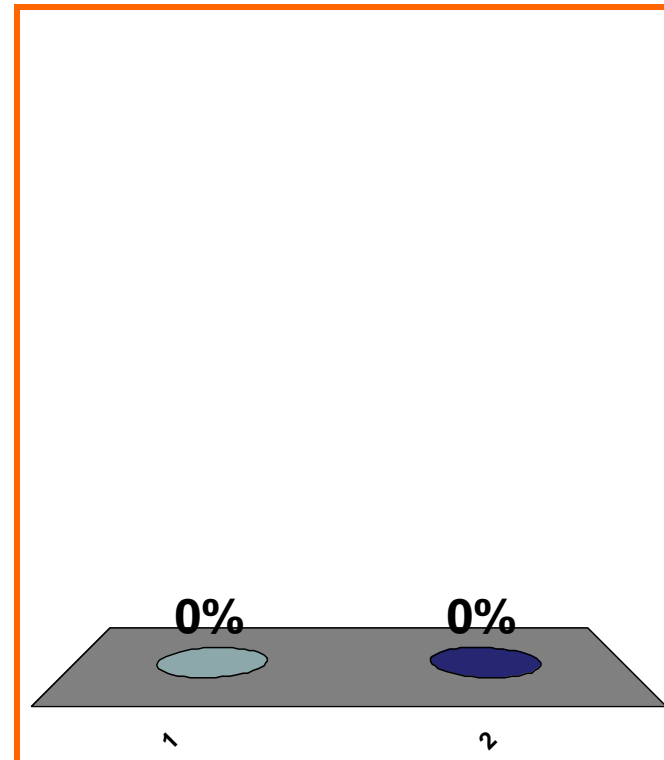
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30										

T or F:

$$\forall x < 0, \sqrt{x^2} = -x$$

(a) True

(b) False



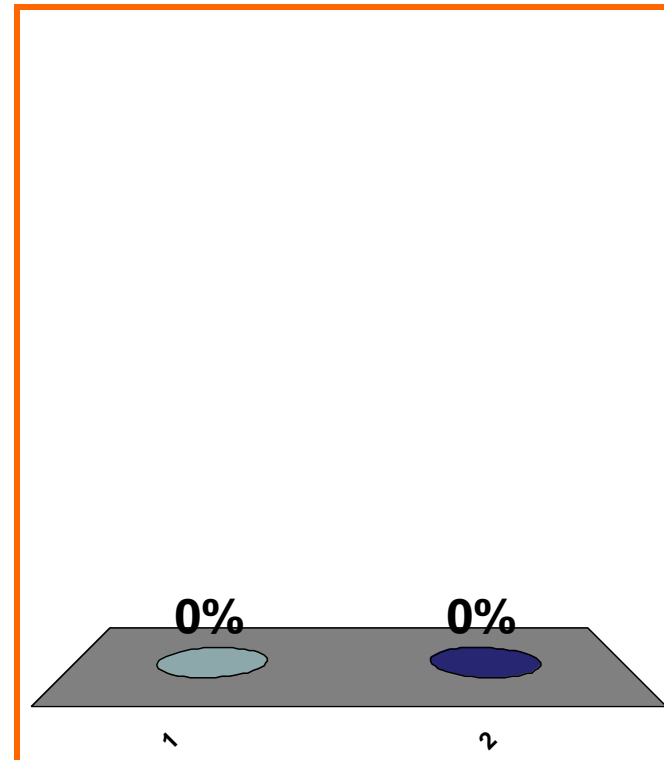
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30										

T or F:

$[-1, 2]$ is compact

(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										

Domain of \sqrt{x} is ??

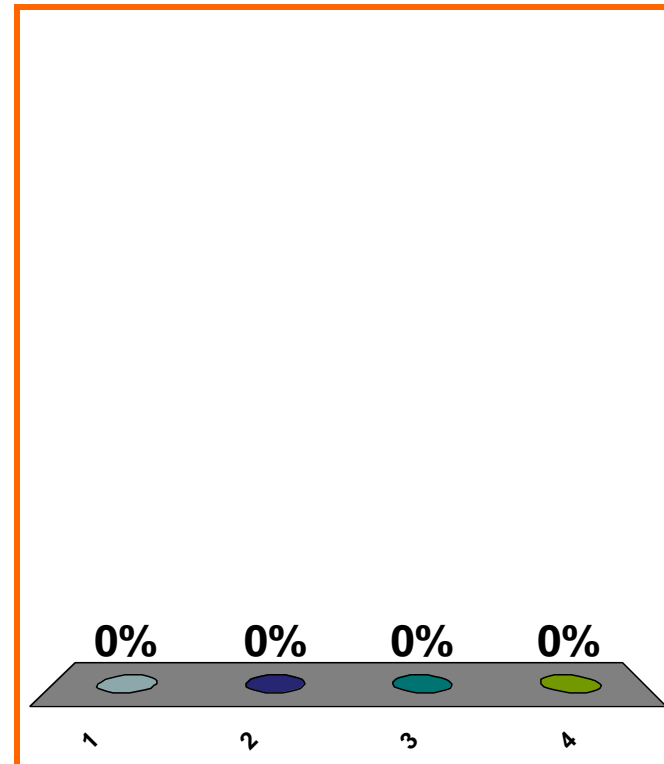
(a) $x \in \mathbb{R}$

(b) $x \in \mathbb{Q}$

(c) $x \in (0, \infty)$

(d) none of the above

Correct answer: $x \in [0, \infty)$



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										

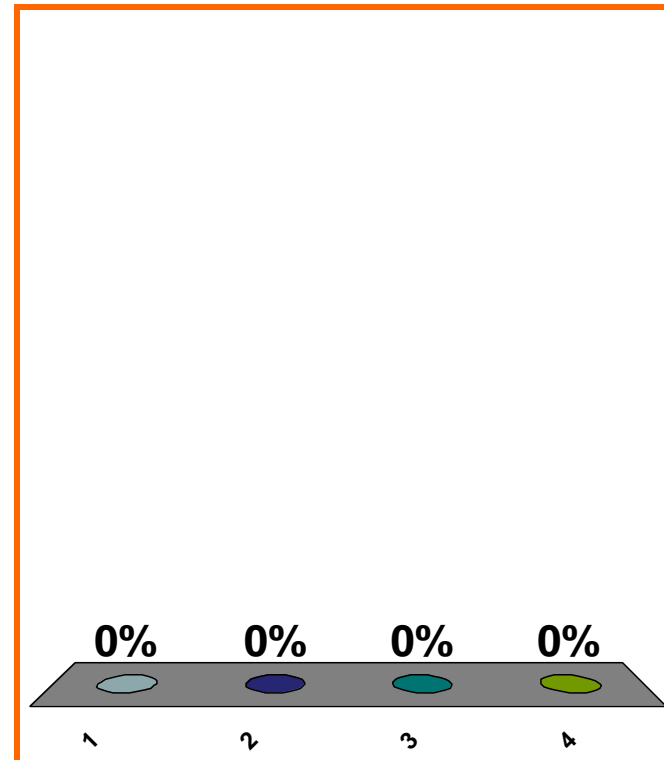
$$x^2 + 3\sqrt{x} + 1 \text{ is ??}$$

(a) polynomial

(b) rational, **not** polynomial

(c) algebraic, **not** rational

(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										

$\sin x$ is ??

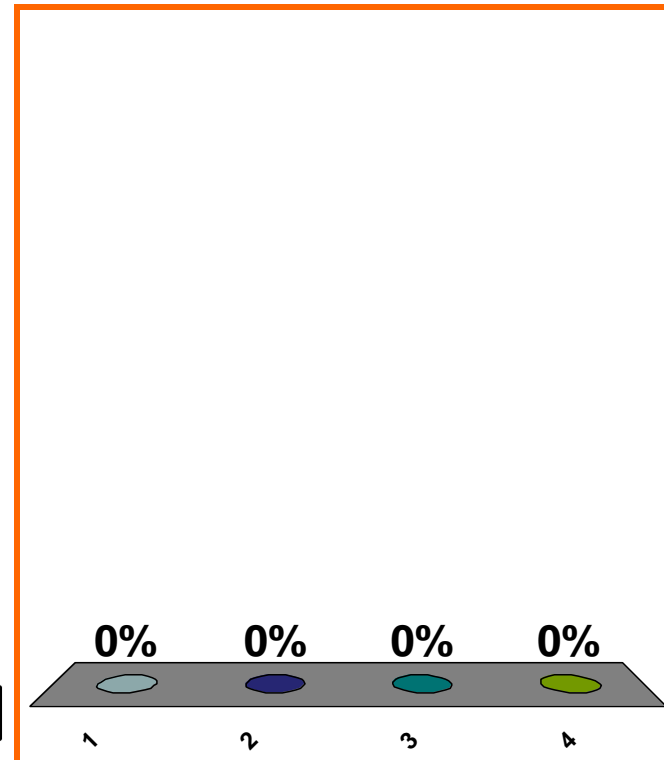
(a) polynomial

(b) rational, **not** polynomial

(c) algebraic, **not** rational

(d) **none** of the above

Correct answer: transcendental



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										

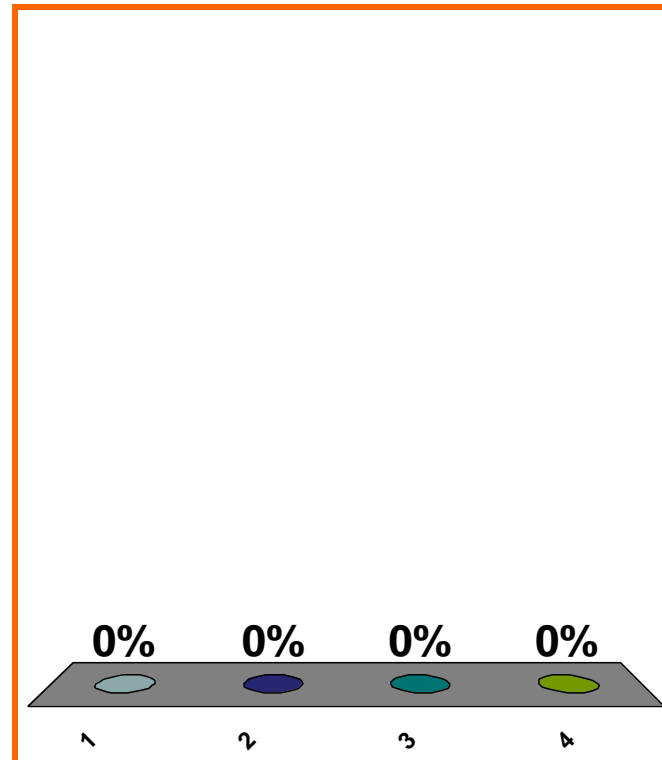
x^{10} is ??

(a) polynomial

(b) rational, **not** polynomial

(c) algebraic, **not** rational

(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										

10^x is ??

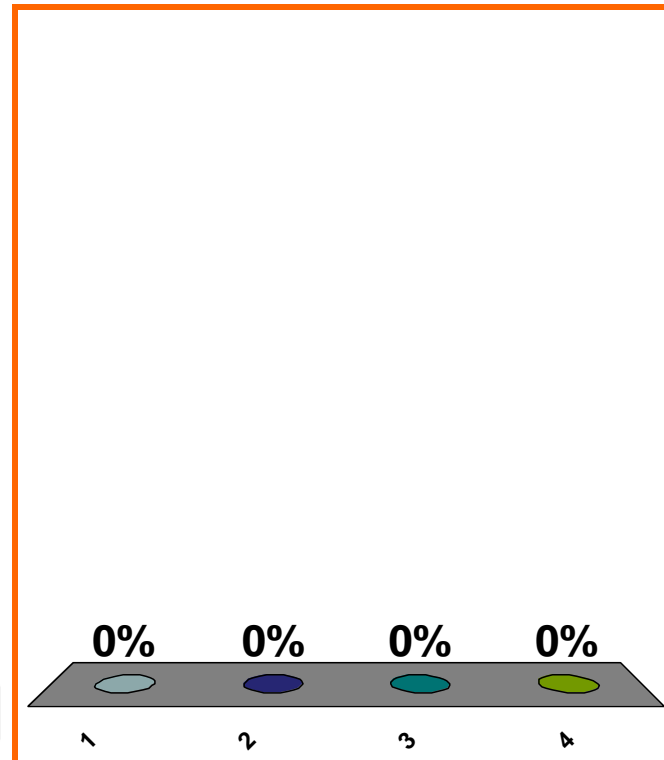
(a) polynomial

(b) rational, **not** polynomial

(c) algebraic, **not** rational

(d) **none** of the above

Correct answer: transcendental



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										

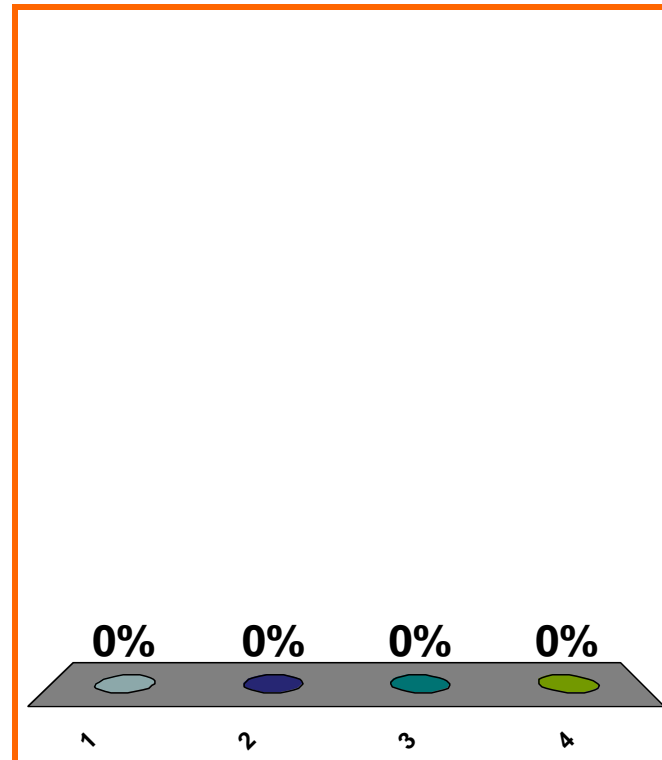
$$\frac{1}{x} \text{ is } ??$$

(a) polynomial

(b) rational, **not** polynomial

(c) algebraic, **not** rational

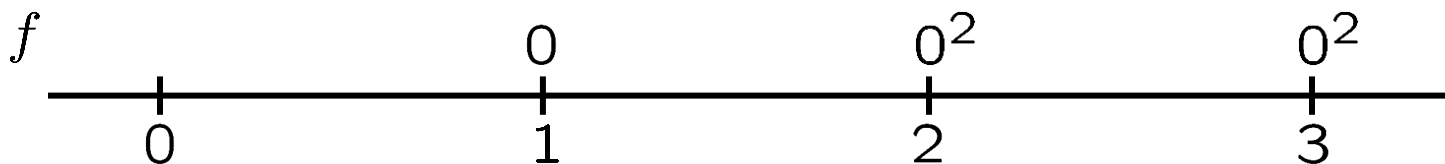
(d) **none** of the above



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										

max interval of

nonneg. for f , if $f(x) = (x-1)(x-2)^2(x-3)^2$.

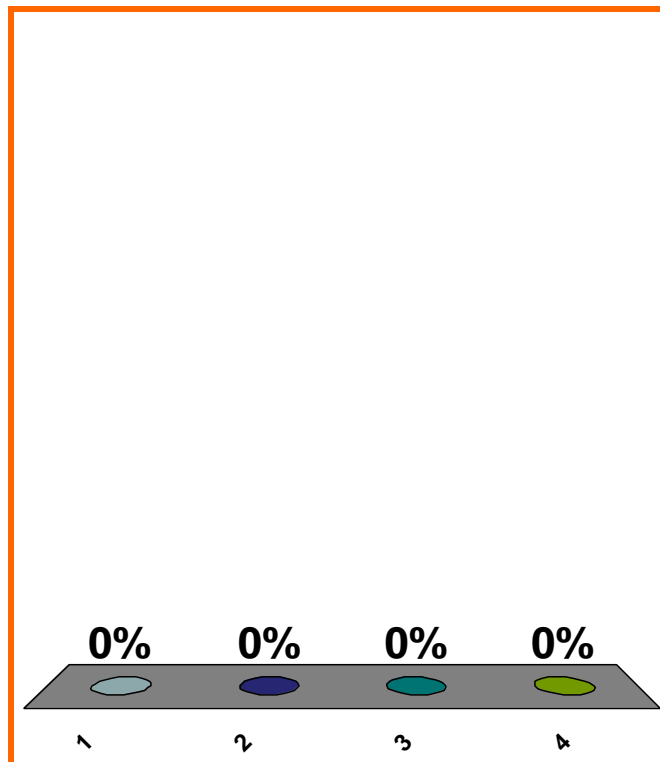


(a) $[0, \infty)$

(b) $[1, \infty)$

(c) $[2, \infty)$

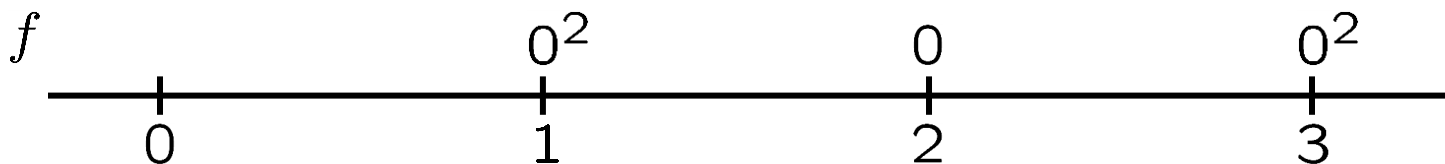
(d) none of the above



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										

max interval of

nonpos. for f , if $f(x) = -(x-1)^2(x-2)(x-3)^2$.

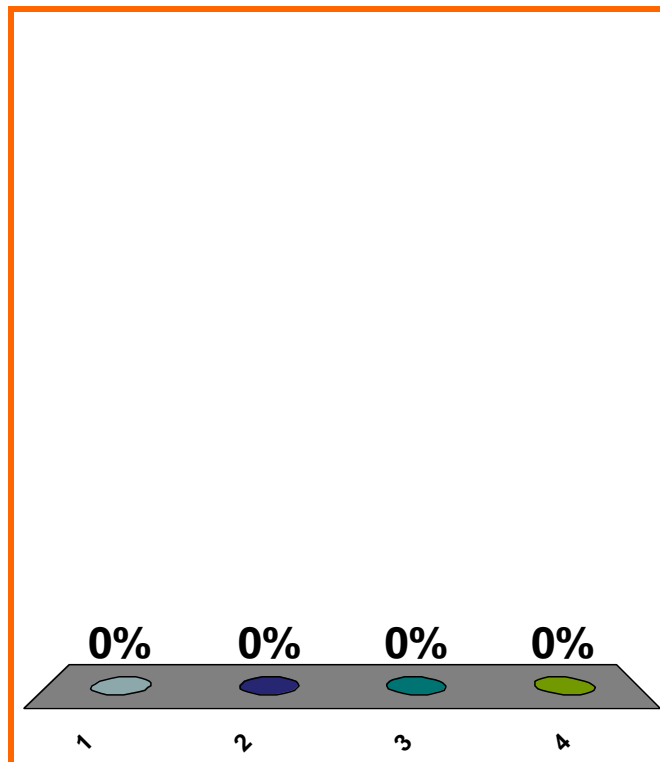


(a) $[0, \infty)$

(b) $[1, \infty)$

(c) $[2, \infty)$

(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										

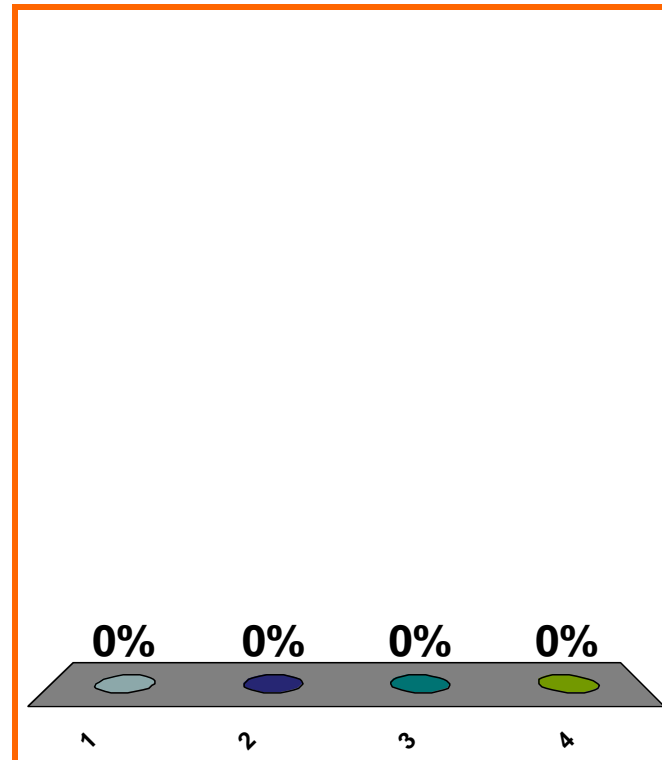
distance from 7 to 9?

(a) 2

(b) -2

(c) 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

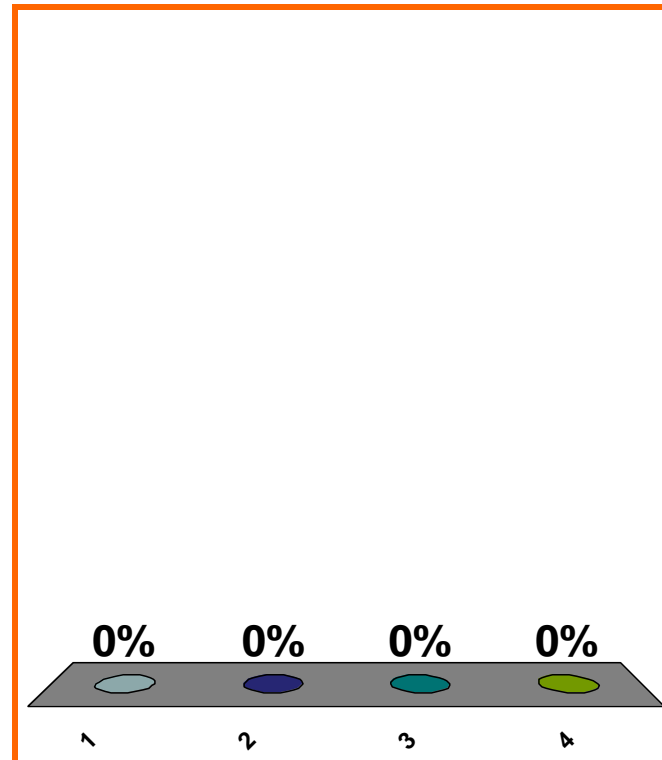
distance from 9 to 7?

(a) 2

(b) -2

(c) 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										

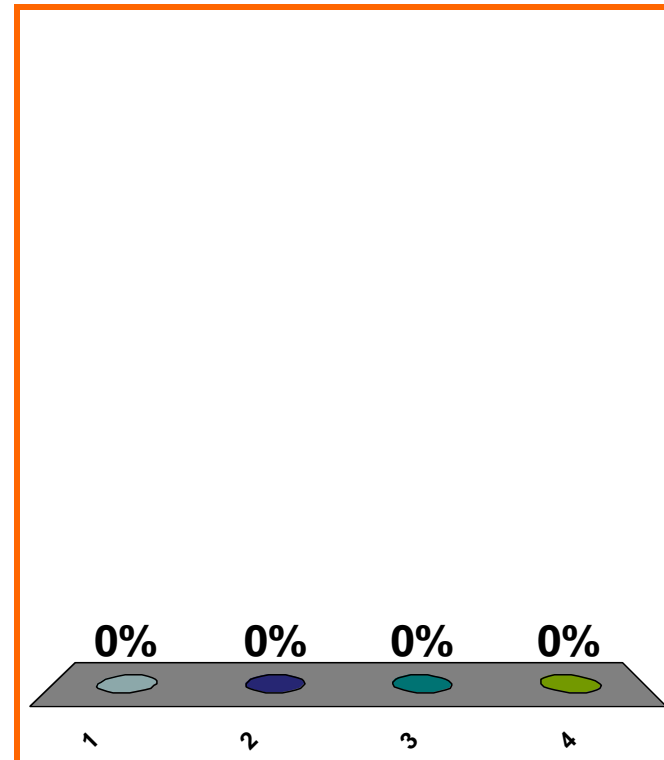
distance from x to 5?

(a) $5 - x$

(b) $|5 - x|$

(c) $x - 5$

(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										

distance from a to b ?

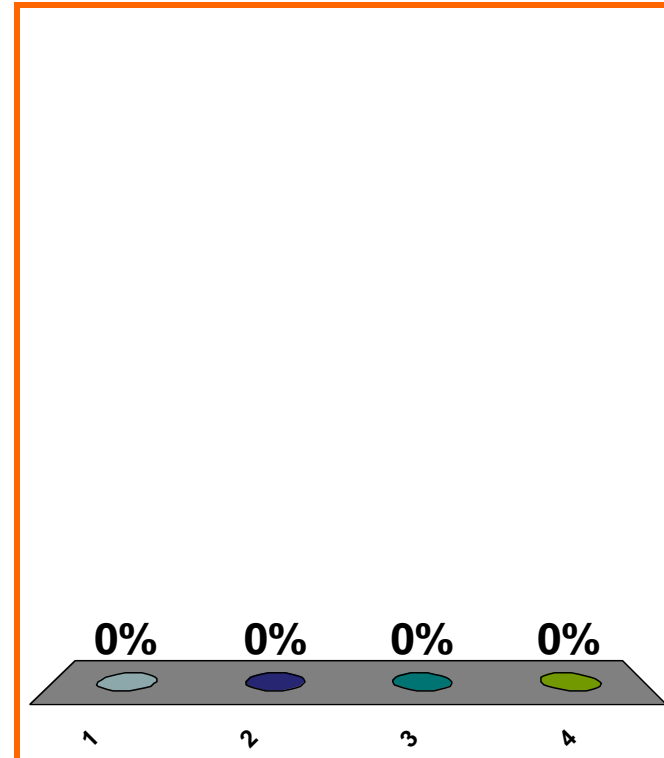
(a) $a - b$

(b) $b - a$

(c) $a + b$

(d) none of the above

Correct answer: $|a - b|$



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										

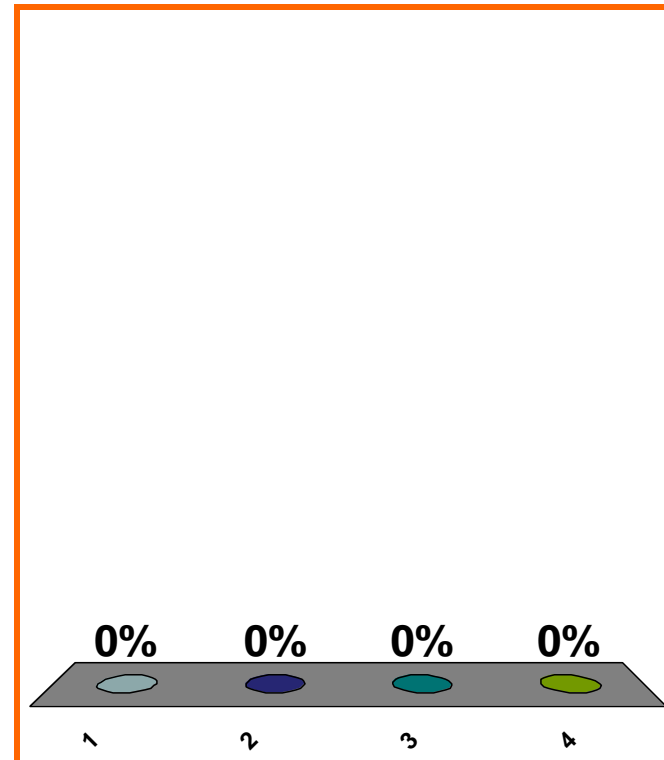
To get graph of $y^2 = \sin(x + \pi)$,
move graph of $y^2 = \sin(x)$...

(a) right π

(b) left π

(c) down π

(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										

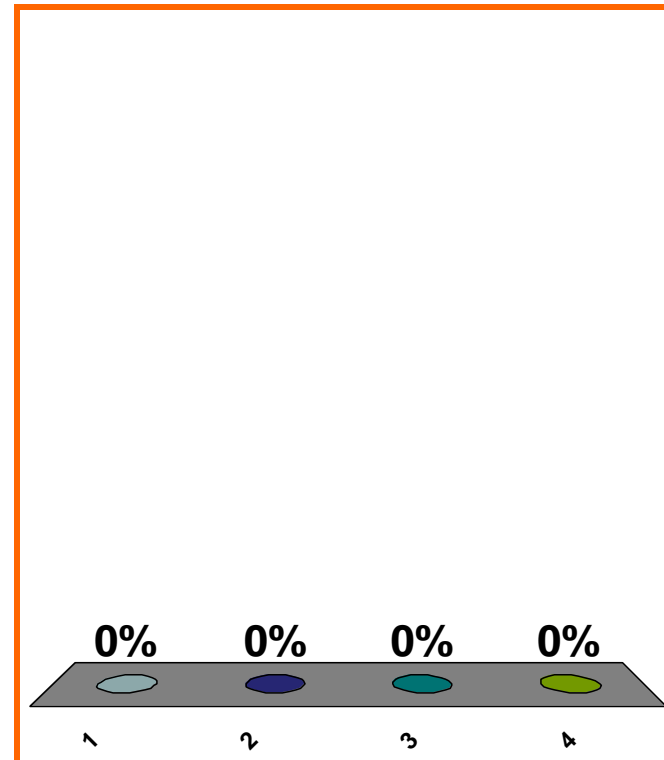
line's slope = 8
goes through (2, 7)
equation?

(a) $x - 7 = 8(y - 2)$

(b) $y - 7 = 8(x - 2)$

(c) $y - 8 = 7(x - 2)$

(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										

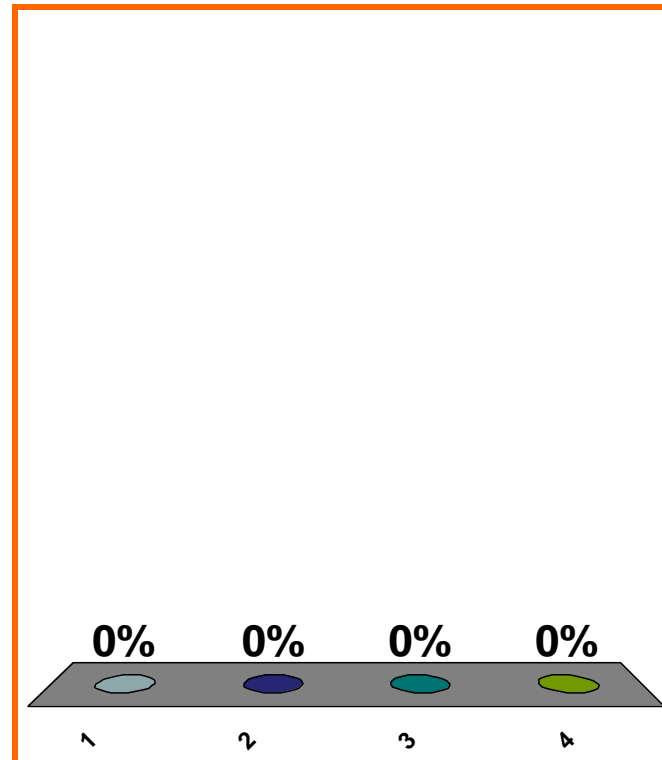
$$\sum_{j=2}^4 j^3 = ??$$

(a) $(2 + 3 + 4)^3$

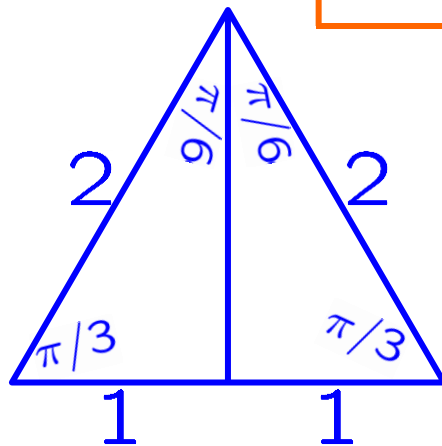
(b) $(1 + 2 + 3 + 4)^3$

(c) $2^3 + 3^3 + 4^3$

(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										



$$\sin(\pi/3) = ??$$

(a) $\sqrt{2}/2$

(b) $\sqrt{3}/2$

(c) $1/2$

(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										

0 of 5

Topic 0090

0 pts

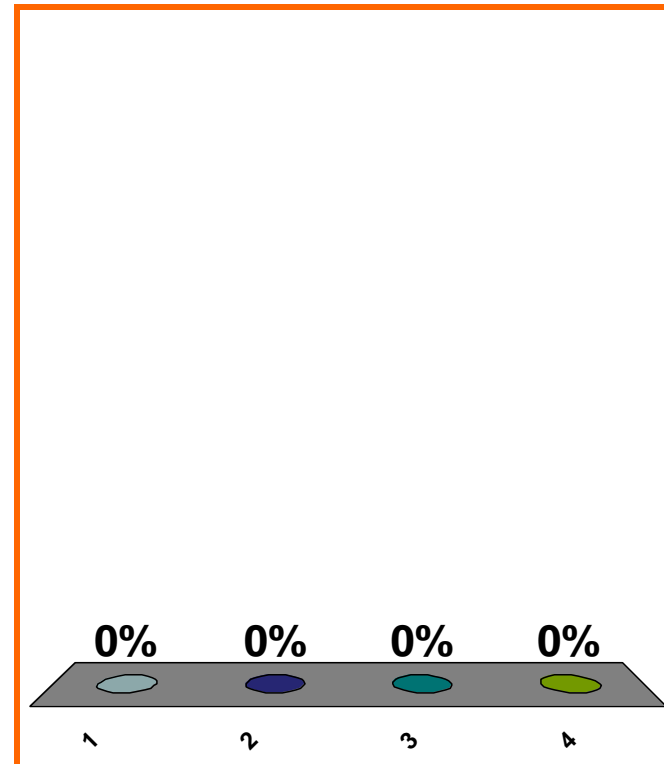
$$\arcsin(\sqrt{3}/2) = ??$$

(a) $\pi/3$

(b) $\pi/4$

(c) $\pi/6$

(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										

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Topic 0110

0 pts

25

from position 5 to position 9
from time 3 to time 11

average velocity = ??

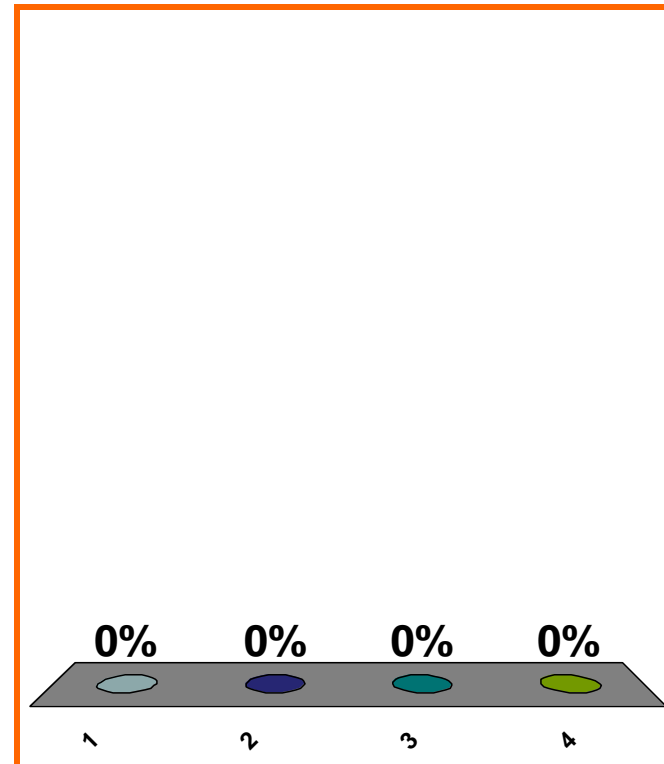
(a) 2

(b) 4

(c) 8

(d) none of the above

Correct answer: 1/2



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										

$$f(1) = 200$$
$$f(3) = 800$$

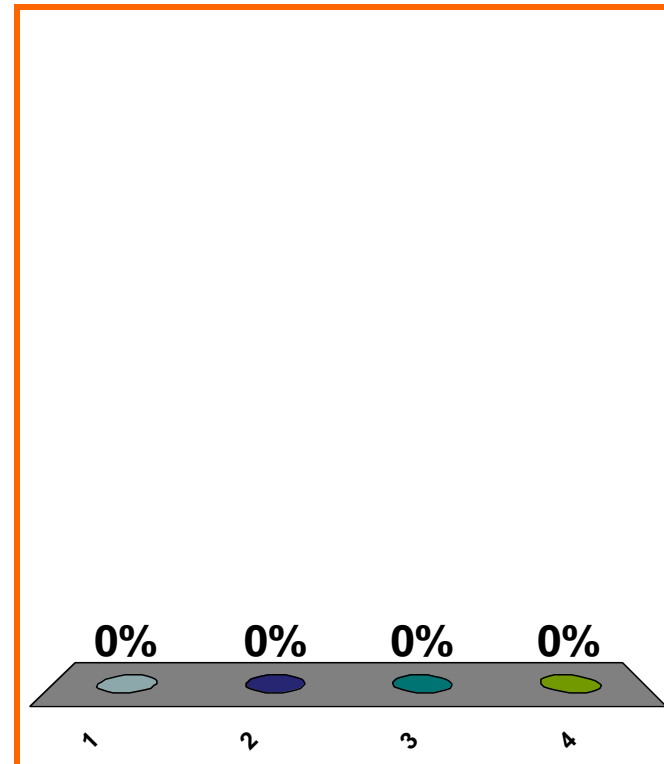
avg rate of change?

(a) $(800 - 200)/(3 - 1)$

(b) $(3 - 1)/(800 - 200)$

(c) $(200 - 800)/(3 - 1)$

(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										

			1							
			1		1					
		1		2		1				
	1		3		3		1			
1		4		6		4		1		

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

(a) $8x^3 - y^3$

(b) $8x^3 + y^3$

(c) $8x^3 - 3(4x^2)y + 3(2x)y^2 - y^3$

(d) none of the above

0%

0%

0%

0%

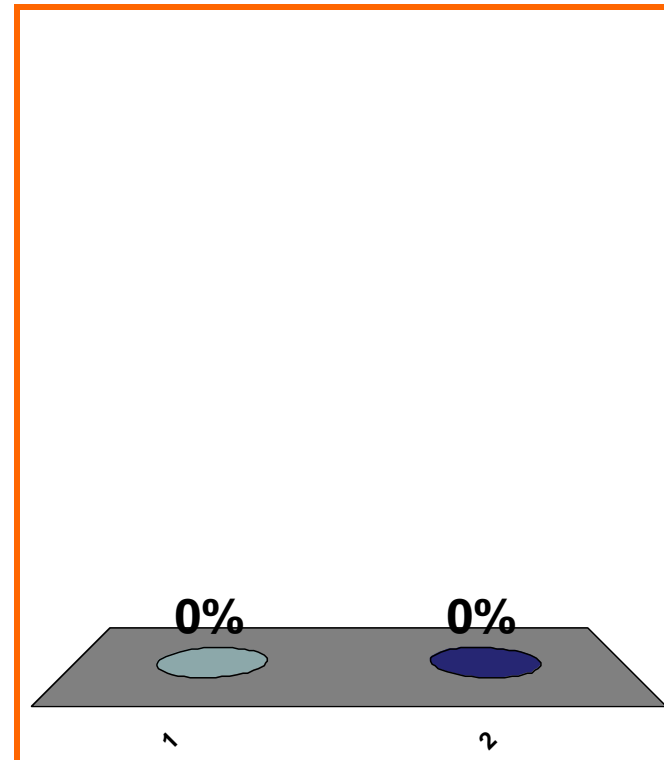
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21	22	23	24	25	26	27	28	29	30										

0 of 5

$$\forall x \in \mathbb{R}, \quad \frac{3x^3 + 2x}{x} = 3x^2 + 2$$

(a) True

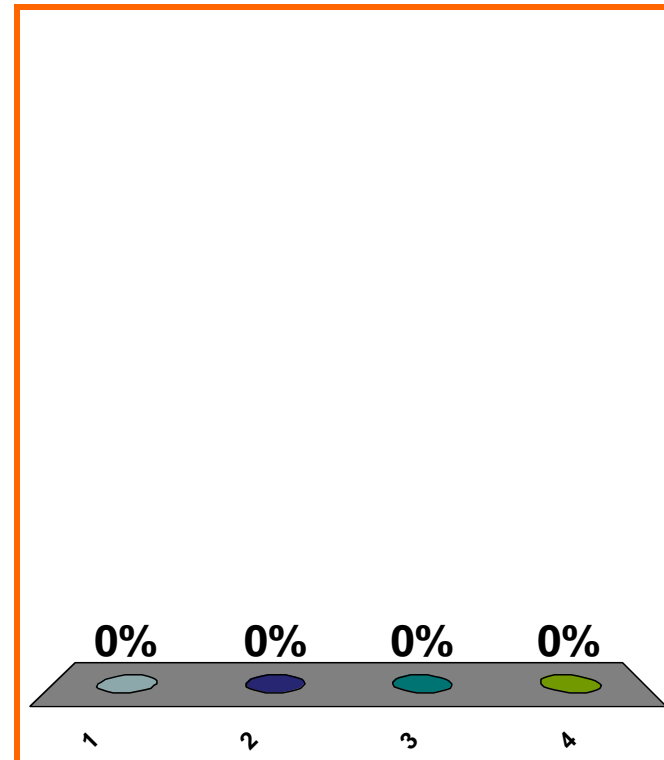
(b) False



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

$$\frac{3x^3 + 2x}{x} \text{ is } \dots$$

- (a) a polynomial in x
- (b) rational in x
- (c) transcendental in 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

$$\left[\frac{3x^3 + 2x}{x} \right]_{x \rightarrow 0} = ??$$

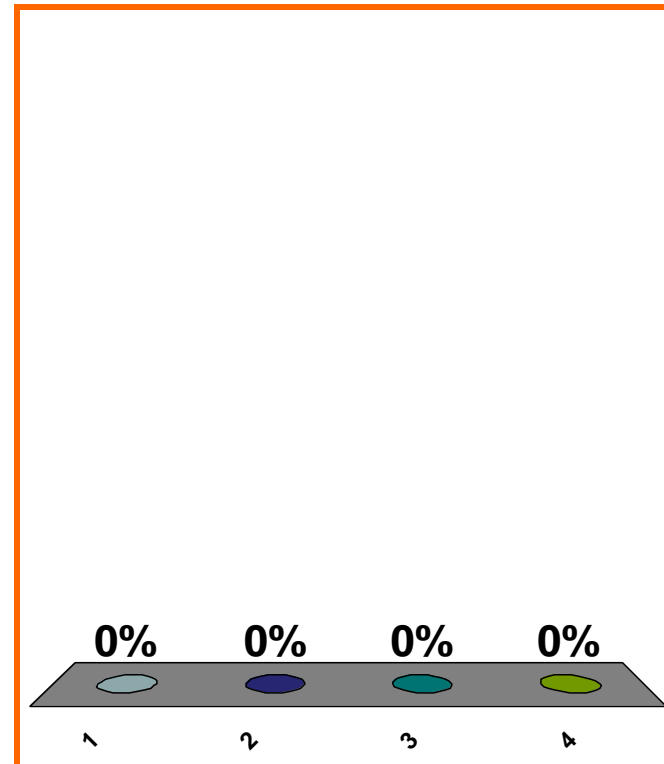
(a) 0

(b) 2

(c) 3

(d) none of the above

Correct answer: DNE



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

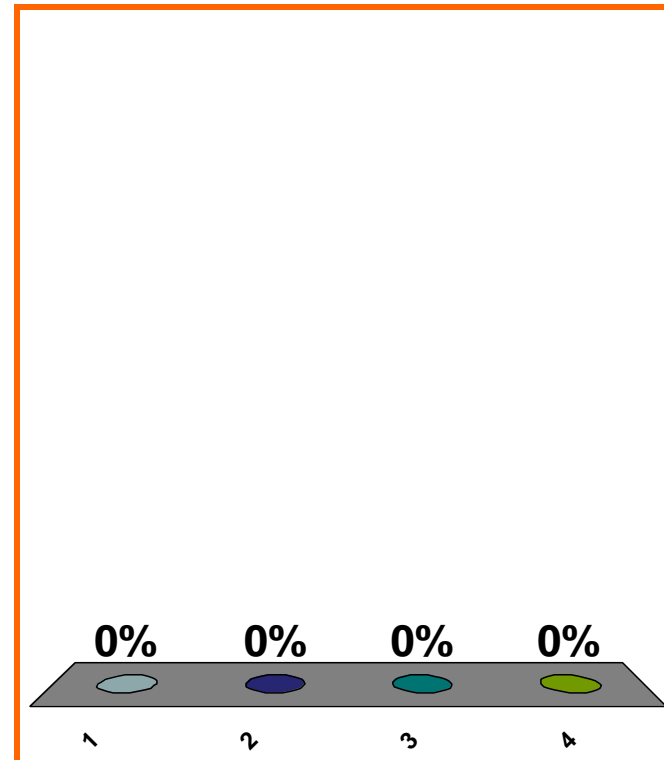
$$\lim_{x \rightarrow 0} \frac{3x^3 + 2x}{x} = ??$$

(a) 0

(b) 2

(c) 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 0140

0 pts

32

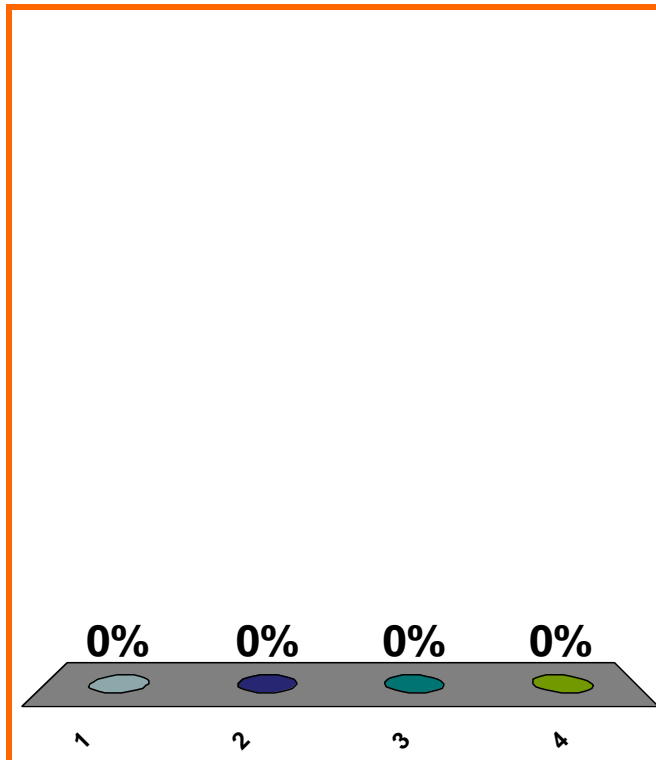
$$\lim_{x \rightarrow \infty} f(x) = -\infty$$

(a) x very pos $\Rightarrow f(x)$ very neg

(b) x very neg $\Rightarrow f(x)$ very pos

(c) $x \approx 0, x \neq 0 \Rightarrow f(x)$ very neg

(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

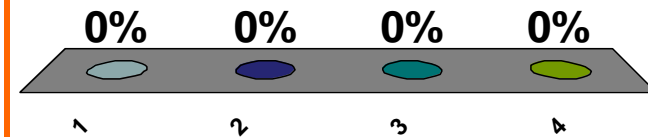
$$\lim_{x \rightarrow 2^-} f(x) = -\infty$$

(a) $x \approx 2, x \neq 2 \Rightarrow f(x)$ very pos

(b) $x \approx 2, x \neq 2 \Rightarrow f(x)$ very neg

(c) $x \approx 2, x < 2 \Rightarrow f(x)$ very neg

(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

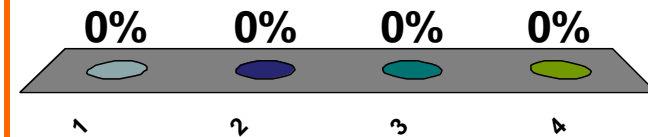
$$\lim_{x \rightarrow 2} f(x) = -\infty$$

(a) $x \approx 2, x \neq 2 \Rightarrow f(x)$ very neg

(b) $x \approx 2, x \neq 2 \Rightarrow f(x)$ very pos

(c) $x \approx 2, x < 2 \Rightarrow f(x)$ very neg

(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

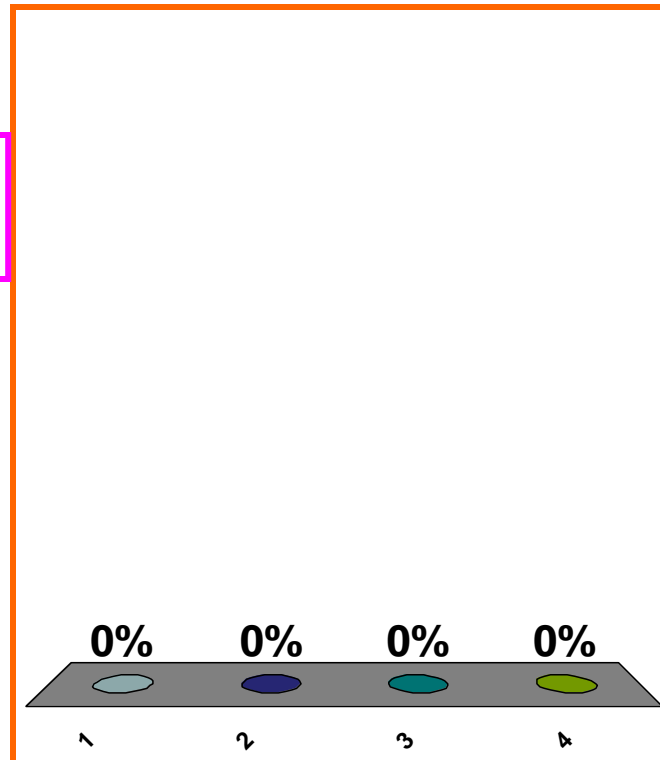
$$\lim_{x \rightarrow 2} f(x) = -\infty$$

(a) $x \approx 2 \Rightarrow f(x)$ very neg

(b) $x \approx 2, x \neq 2 \Rightarrow f(x)$ very neg

(c) $x \approx 2, x < 2 \Rightarrow f(x)$ very neg

(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

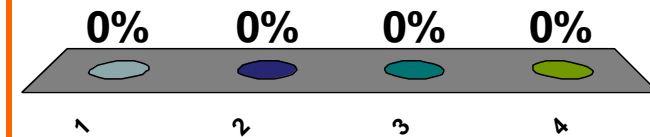
$$(a) x \approx 2 \Rightarrow f(x) \approx 7$$

$$\lim_{x \rightarrow 2} f(x) = 7$$

$$(b) x \approx 2, x \neq 2 \Rightarrow f(x) \approx 7, f(x) \neq 7$$

$$(c) x \approx 2, x \neq 2 \Rightarrow f(x) \approx 7$$

(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 0150

0 pts

37

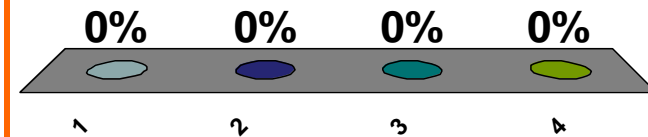
(a) $x \approx 2 \Rightarrow f(x)$ very neg

$$\lim_{x \rightarrow 2} f(x) = -\infty$$

(b) $x \approx 2, x \neq 2 \Rightarrow f(x)$ very neg

(c) $x \approx 2, x \neq 2 \Rightarrow f(x)$ very pos

(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

additivity of error

LOOK AHEAD

differentiate polynomials

differentiate trig functions

product rule and quotient rule