

Calculus

W 5 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

Expectations:

Mastery of precalculus

12 hours per week, for “average student”
watch videos by due date (55 hrs) UNDISTRACTED

attend all classes (lecture & recitation)

good standing: 34.15% A- and above

do all homework

QUESTIONS?

Some policies:

no partial credit on multiple choice

no handheld devices during exams, quizzes

no electronic devices during class, esp. quizzes

limited collaboration on HW

Grading:

Gateway exam on differentiation

HW, lect. quizzes, rec. quizzes all 10%

Two midterms, each 20%

Final exam 30%

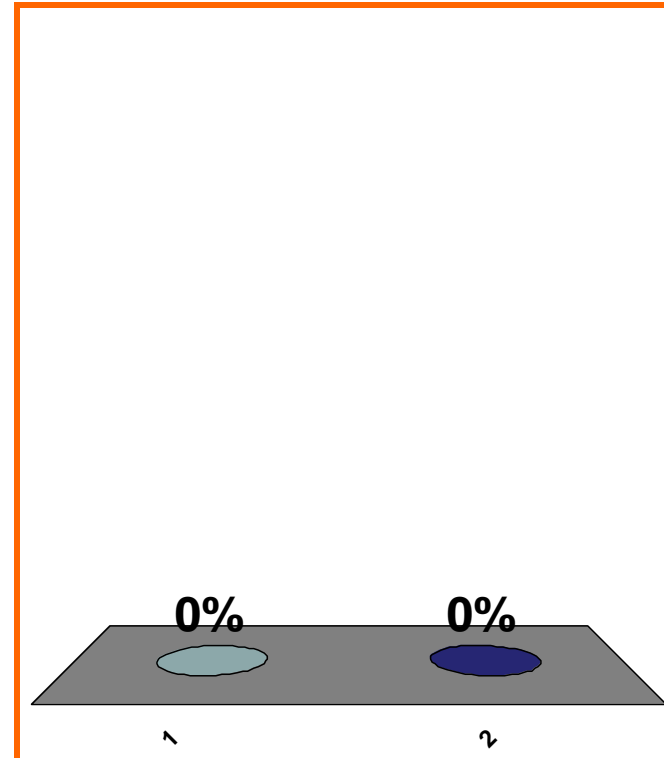
QUIZ
FOLLOWS

T or F:

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

(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

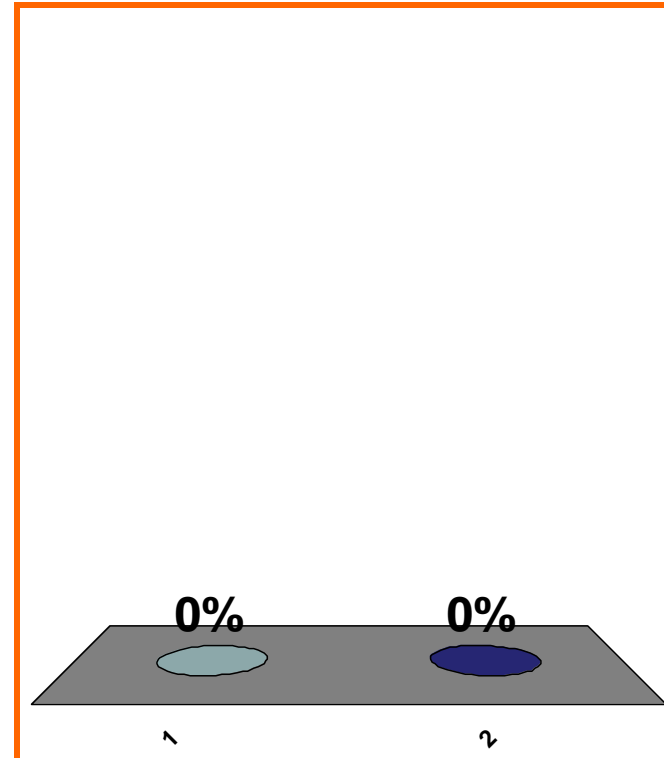
6

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										

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Topic 0010

0 pts

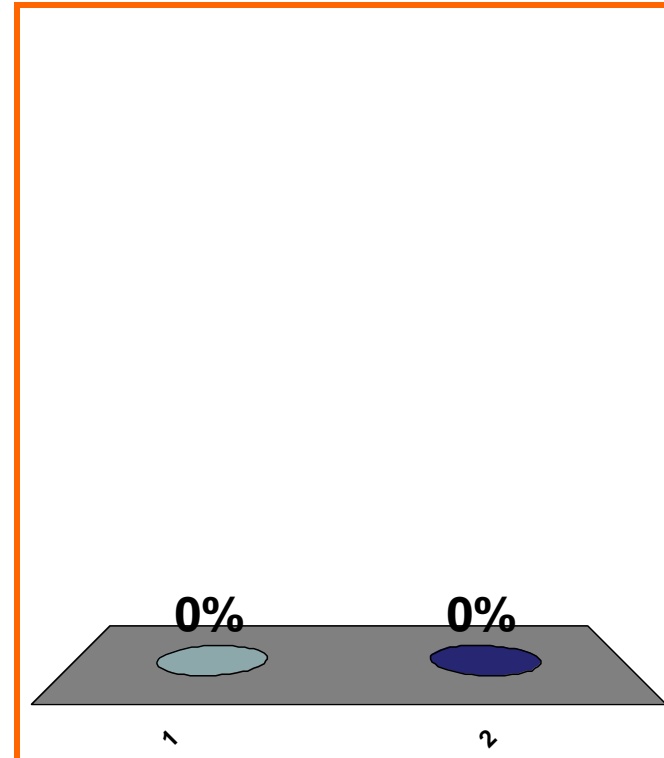
7

T or F:

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

(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										

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Topic 0010

0 pts

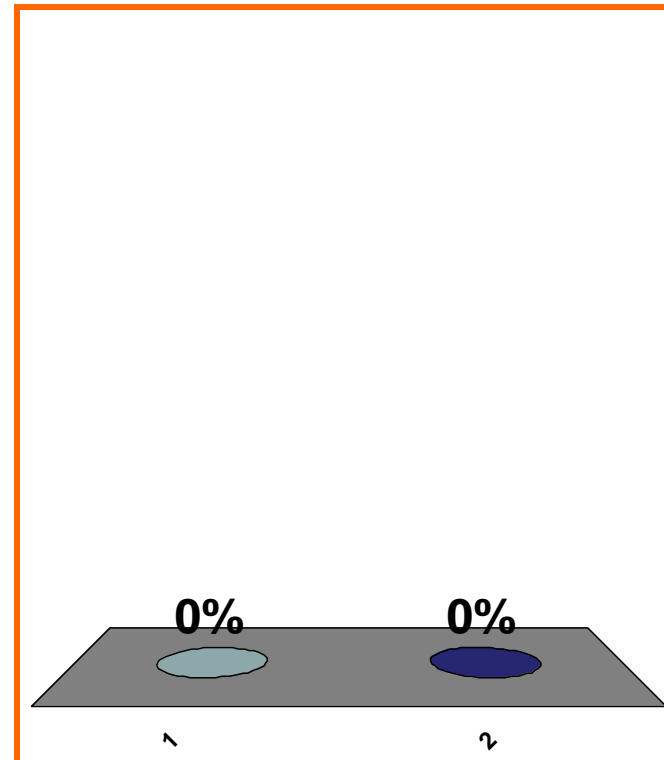
8

T or F:

$$\exists x \in \mathbb{R} \text{ s.t. } x^2 = -1$$

(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										

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Topic 0010

0 pts

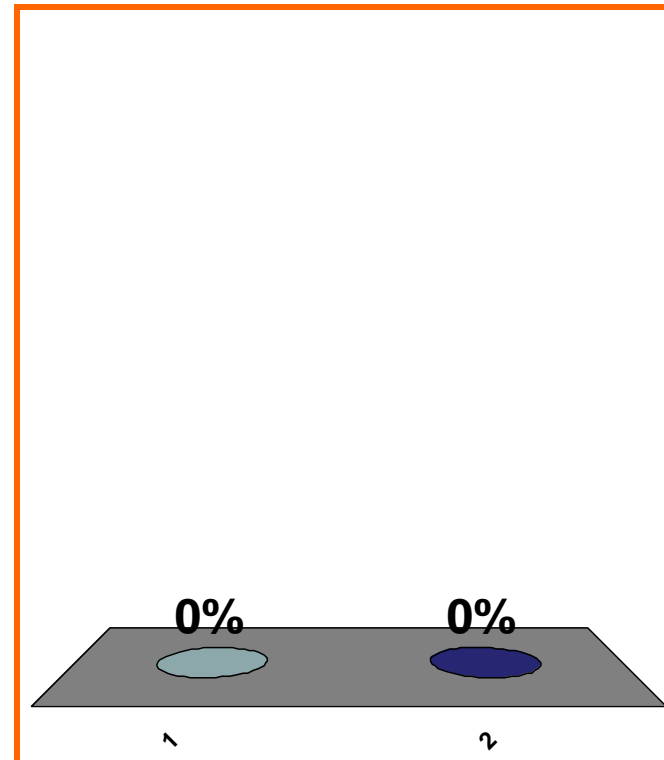
9

T or F:

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

(a) True

(b) False



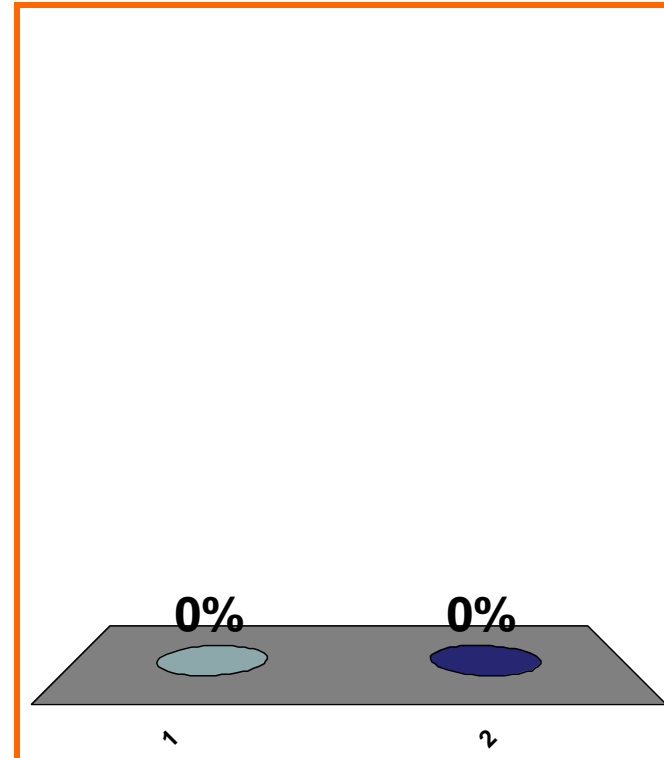
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30										

T or F:

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

(a) True

(b) False



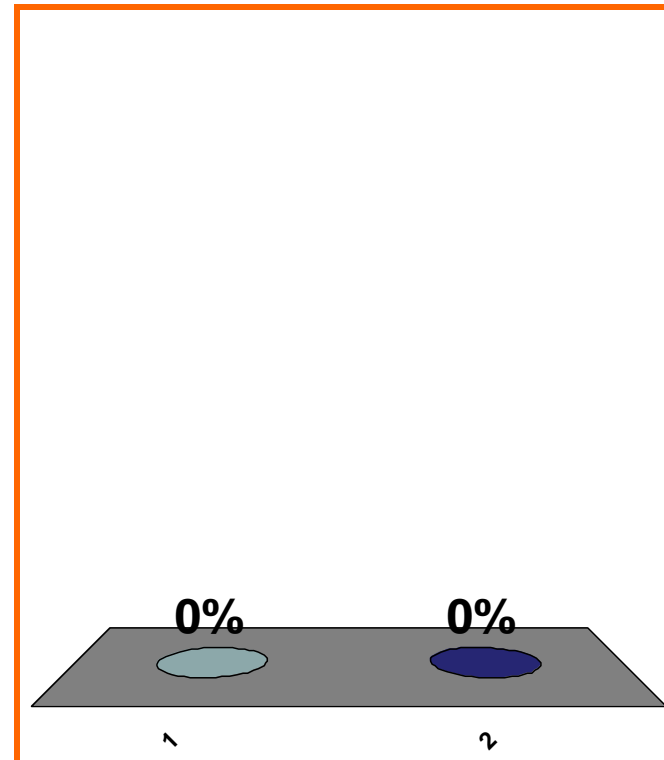
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30										

T or F:

$(-1, 1)$ is open

(a) True

(b) False



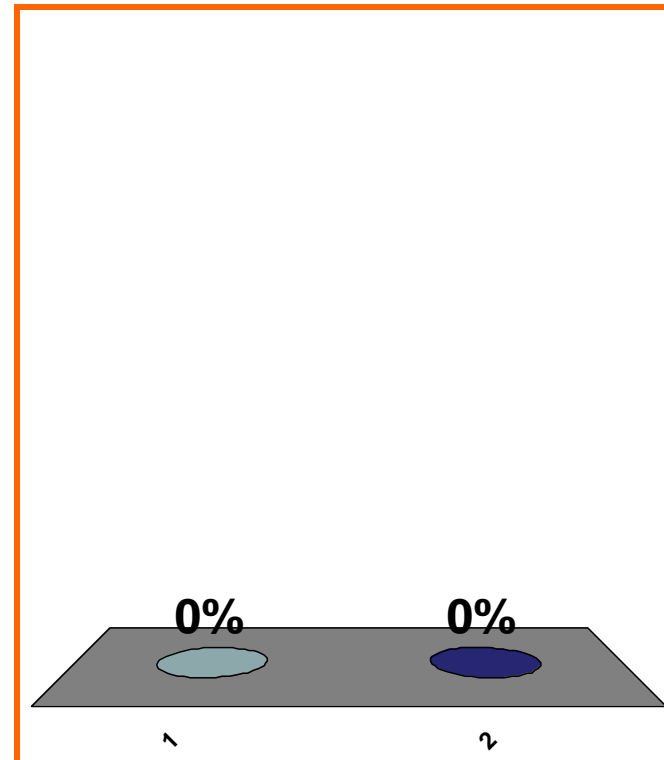
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30										

T or F:

$[-1, \infty)$ is closed

(a) True

(b) False



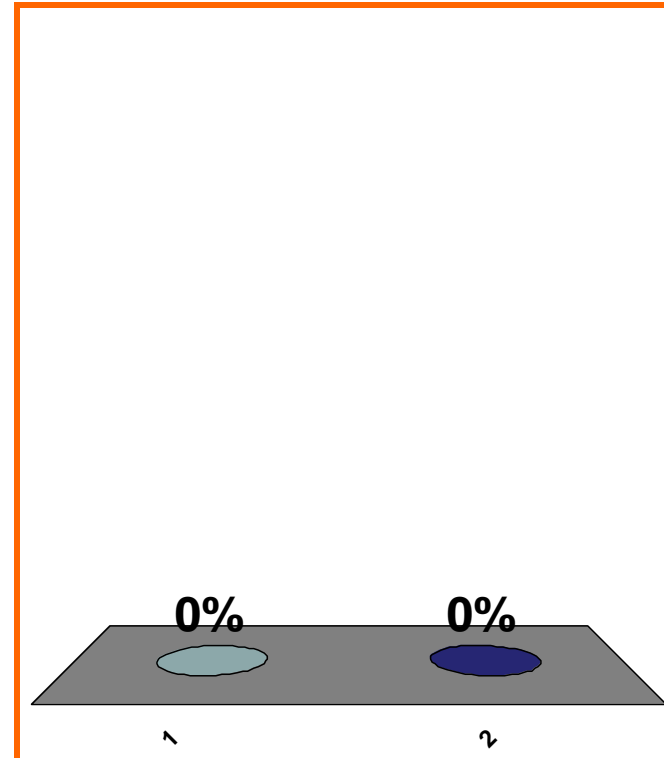
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30										

T or F:

$[-1, \infty)$ 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 ??

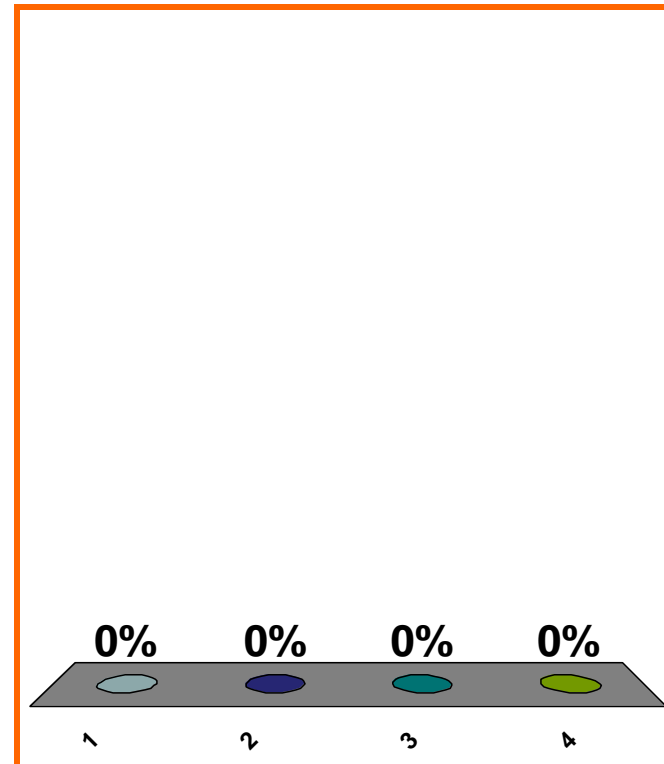
(a) $x \in \mathbb{R}$

(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										

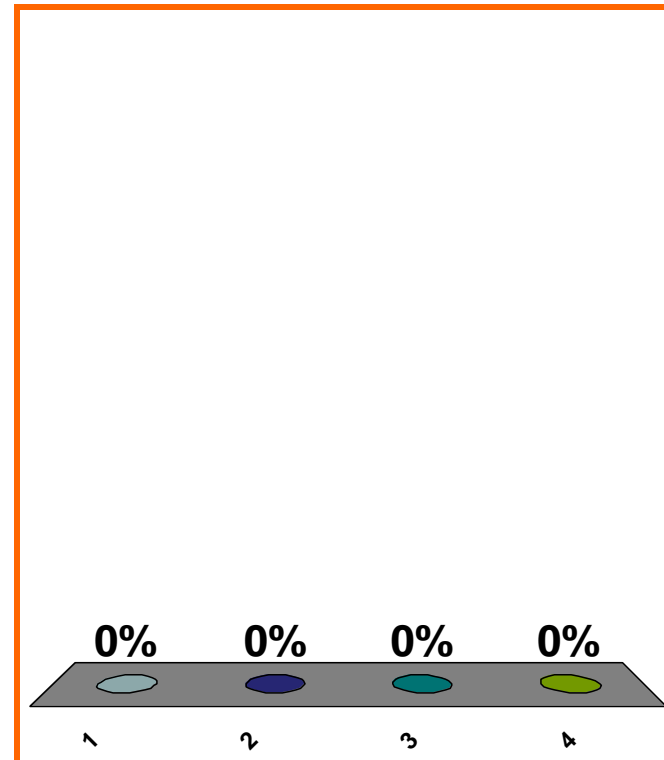
Which is a linear combination of $1, x, x^2$?

(a) $\sin x$

(b) $2 + 8x + 7x^2$

(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										

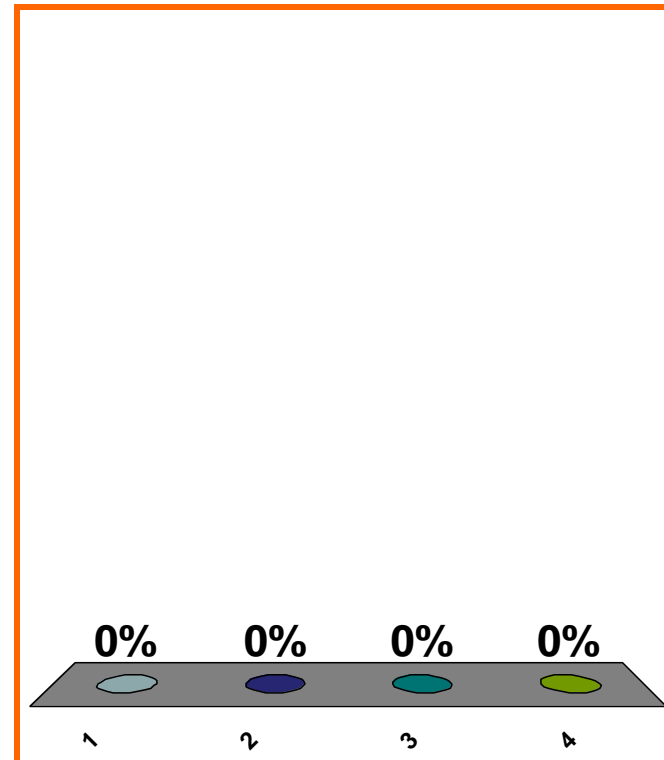
Which is a linear combination of $1, x, x^2$?

(a) $\sin x$

(b) $2 - x$

(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										

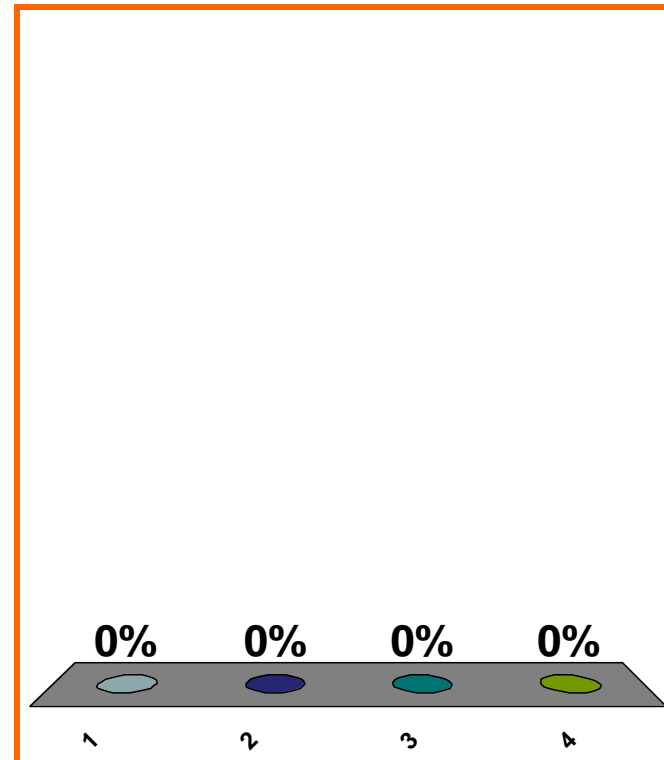
Quartic coefficient in
 $3x^5 + x^4 - x^3 + 8x + \pi$

(a) 1

(b) 3

(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										

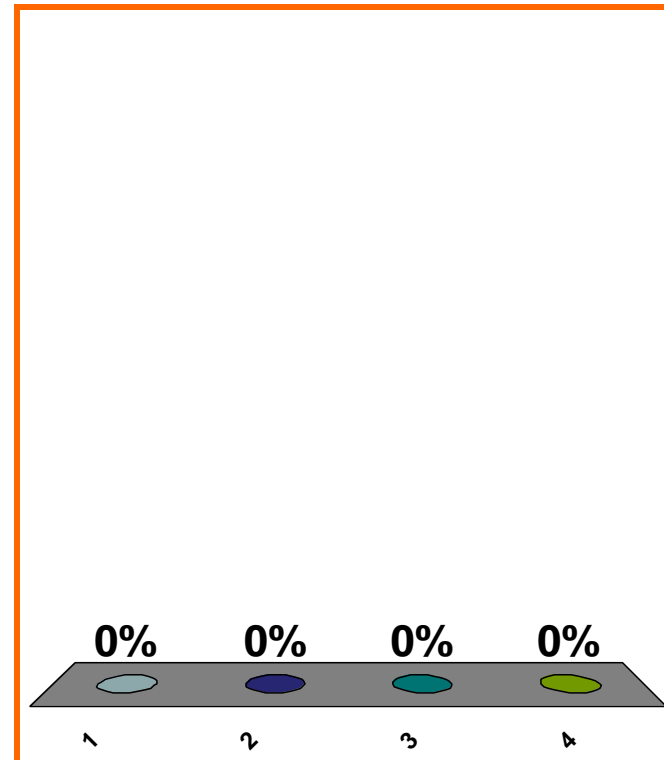
Leading coefficient in
 $3x^5 + x^4 - x^3 + 8x + \pi$

(a) 1

(b) 3

(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										

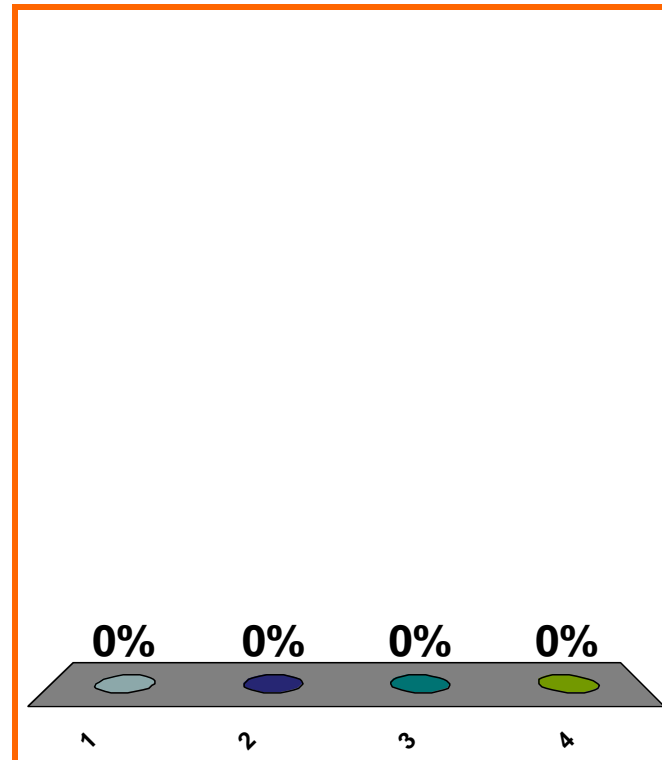
$$x^2 + 3x + 1 \text{ is } ??$$

(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										

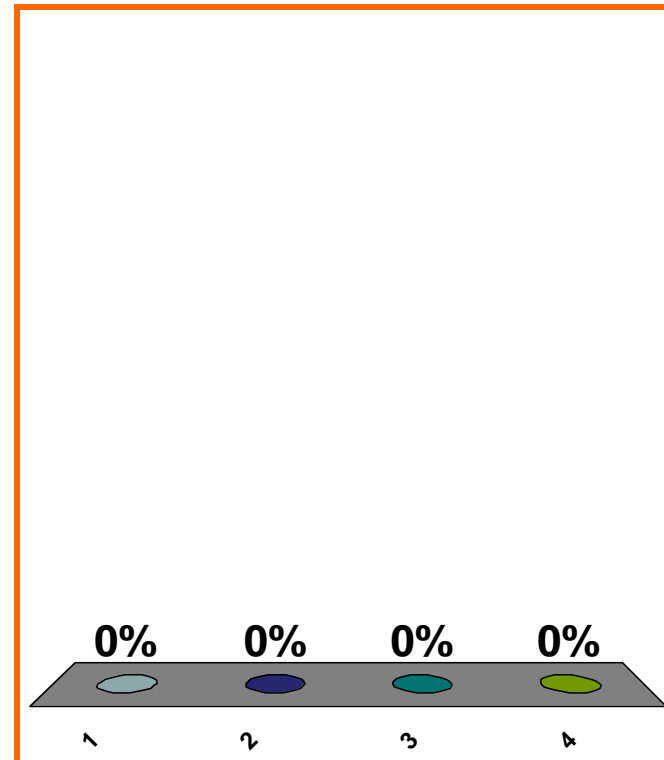
$$x^2 + 3\sqrt{x} + 1 \text{ is ??}$$

(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 ??

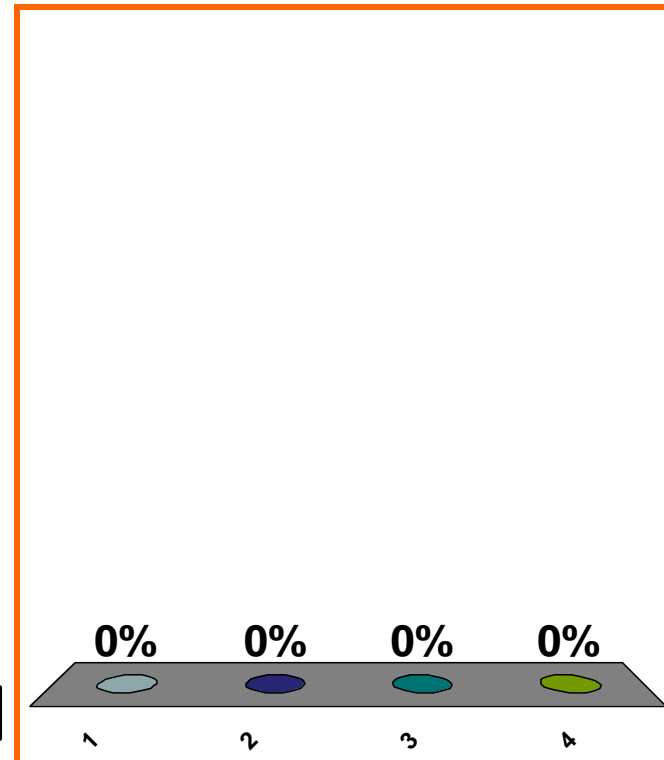
(a) polynomial

(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										

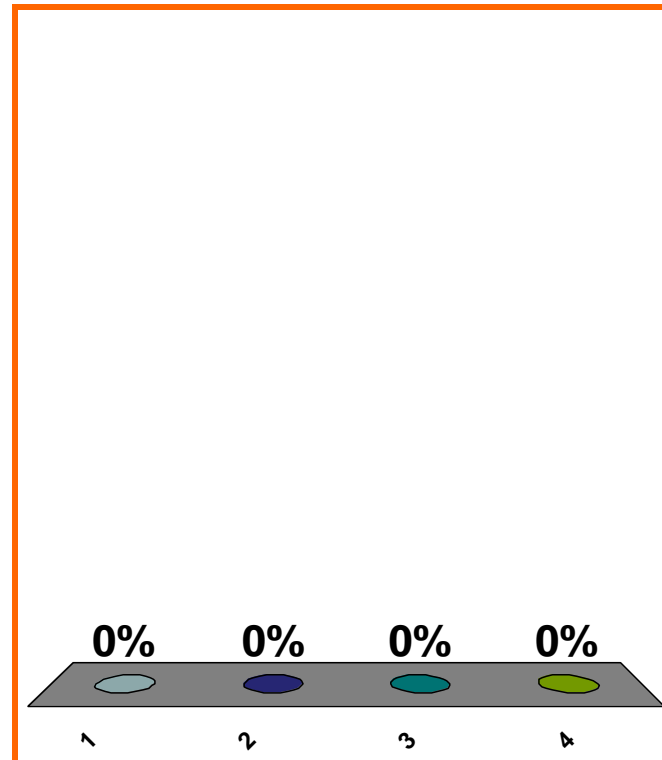
x^{10} is ??

(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										

0 of 5

Topic 0030

0 pts

23

10^x is ??

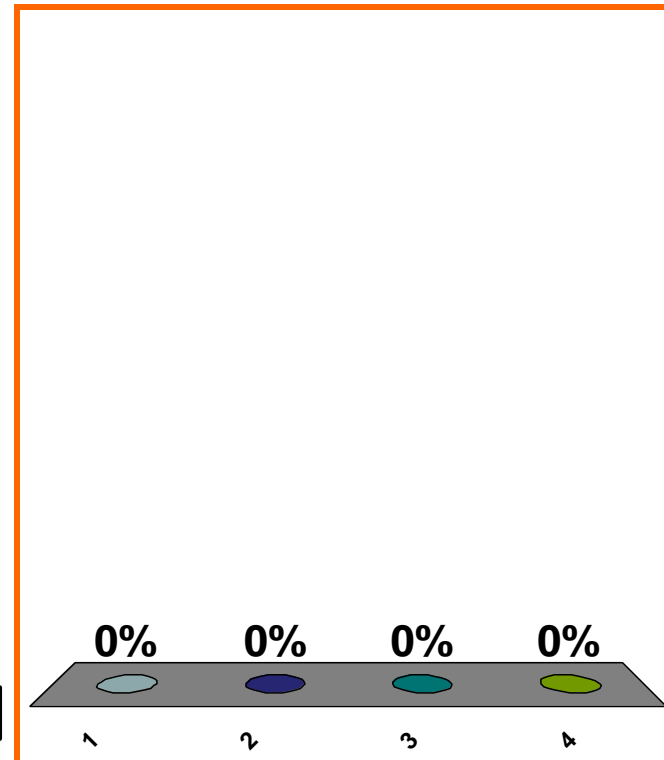
(a) polynomial

(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										

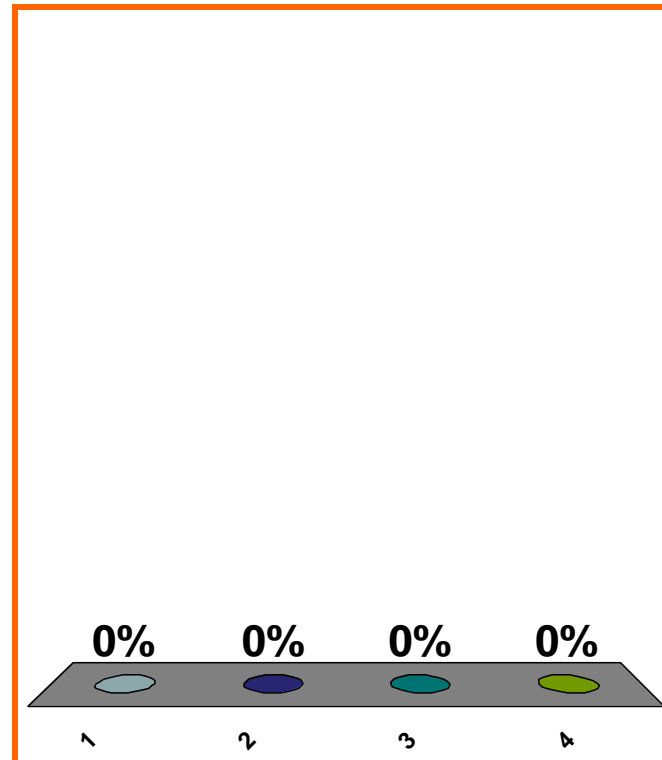
$$\frac{1}{x} \text{ is } ??$$

(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										

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

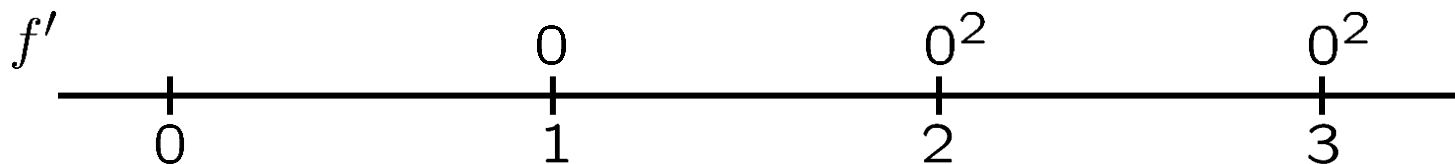
0%

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

max interval of pos.

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

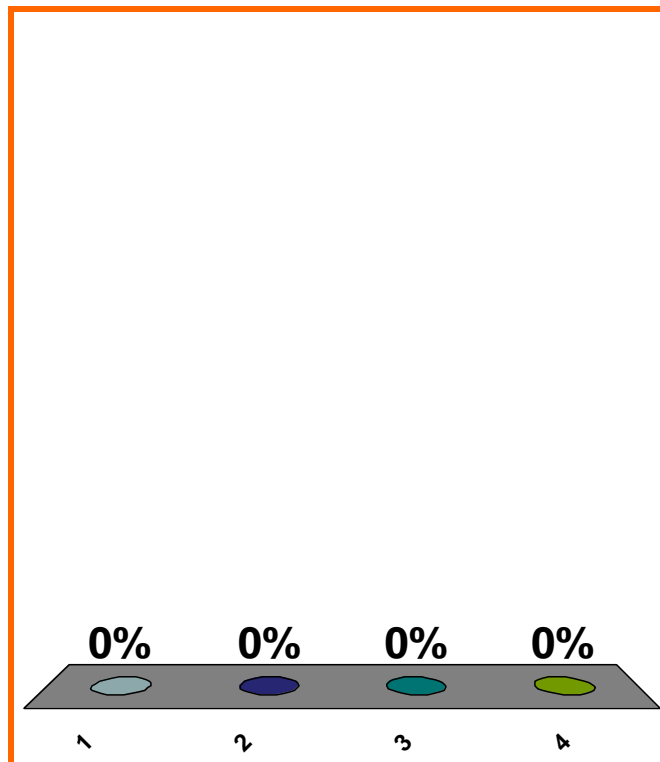


(a) $(0, \infty)$

(b) $(1, \infty)$

(c) $(2, \infty)$

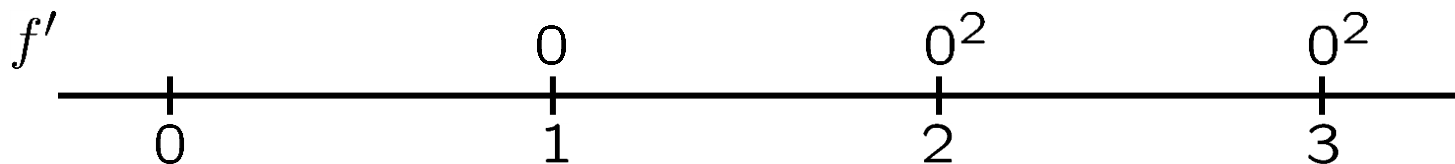
(d) none of the above



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 neg.

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

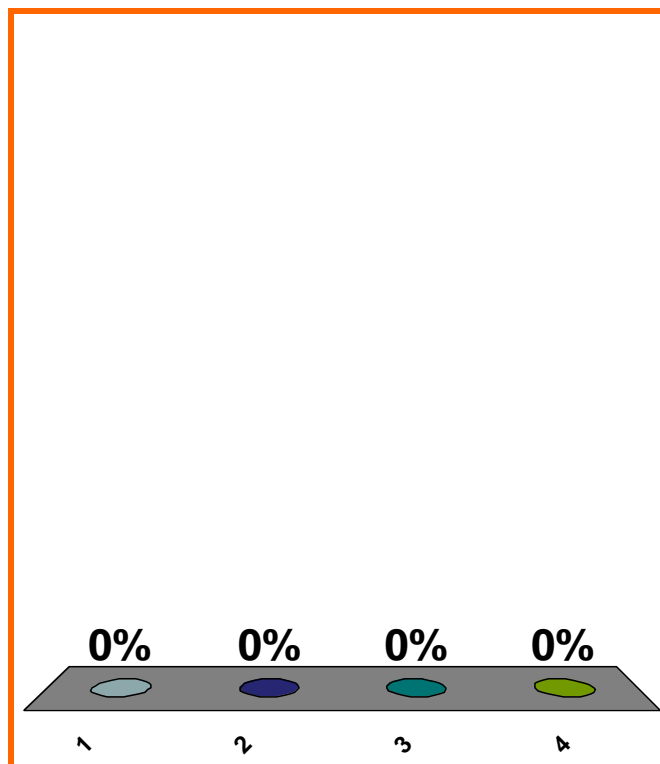


(a) $(0, \infty)$

(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										

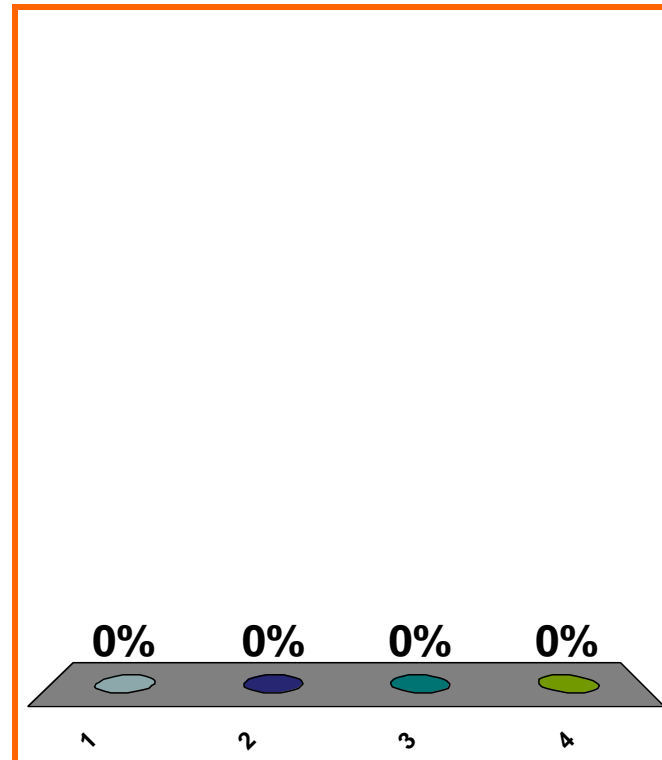
distance from 7 to 9?

(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										

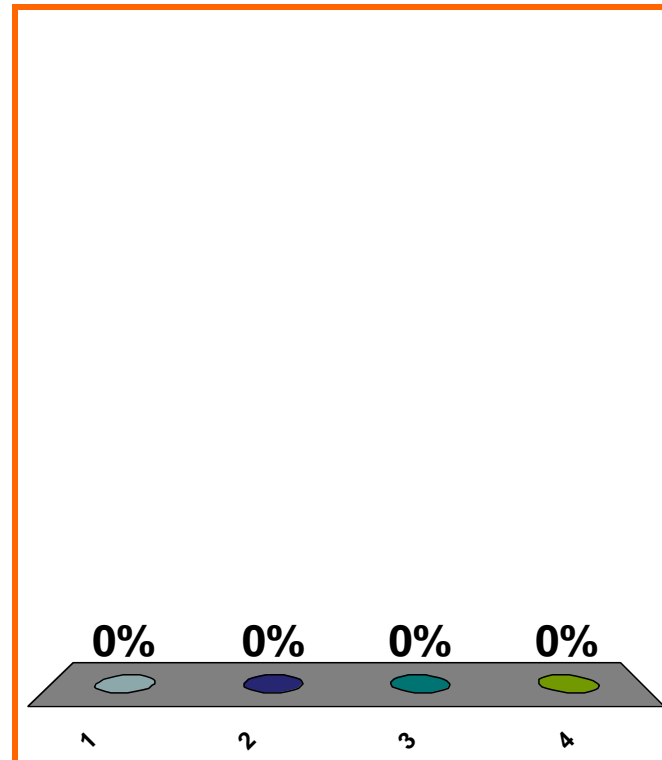
distance from 9 to 7?

(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										

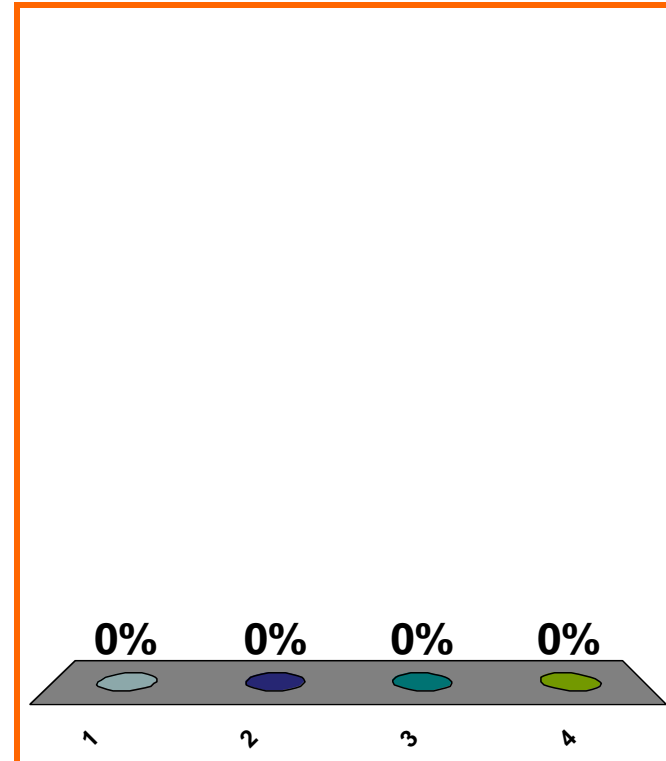
distance from x to 5?

(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 ?

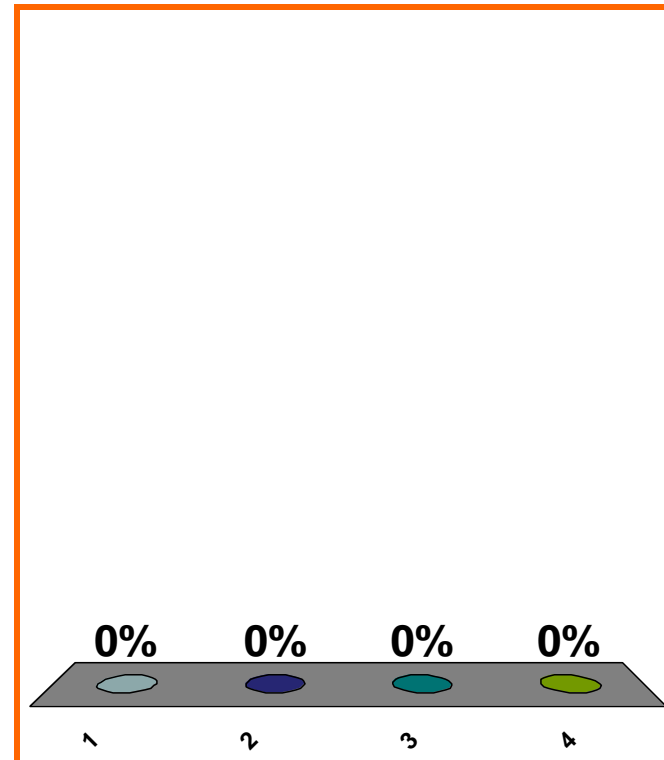
(a) $a - b$

(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										

graph intervals
graph neighborhoods
graph punctured neighborhoods
additivity of error

LOOK AHEAD

t^2 rods in t seconds; velocity?
differentiate polynomials
differentiate trig functions

SAVE THE
SESSION
DATA

RETURN TO
PRESENTATION