

Calculus

W 19 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

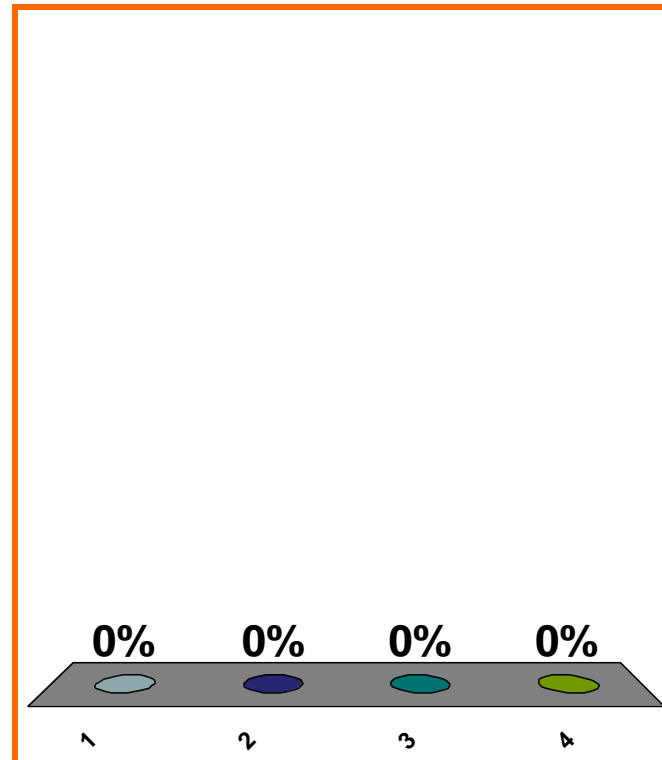
$$\lim_{x \rightarrow 0} \frac{3x^3 + 2x}{x} = ??$$

(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

0 of 5

Topic 0140

10 pts

5

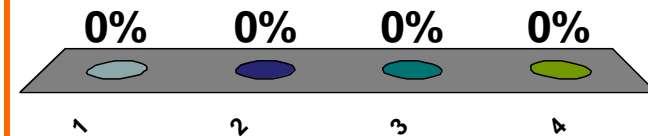
$$\lim_{x \rightarrow 2} f(x) = -\infty$$

(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

0 of 5

Topic 0150

10 pts

6

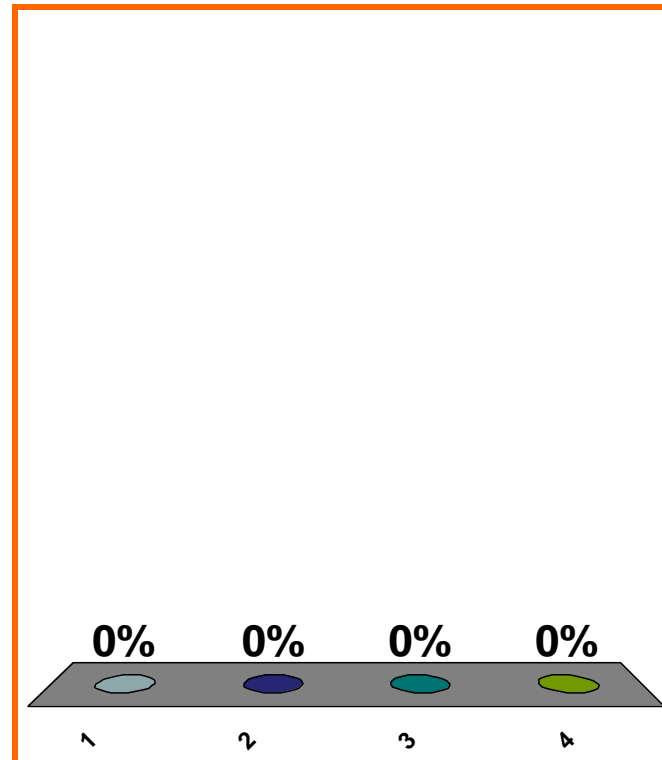
$$\lim_{x \rightarrow 5} \left(\frac{3x^3 - 2x + 8}{x - 4} \right)$$

(a) $(3)(5^3) - (2)(5) + 8$

(b) $-\infty$

(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

0 of 5

Topic 0190

0 pts

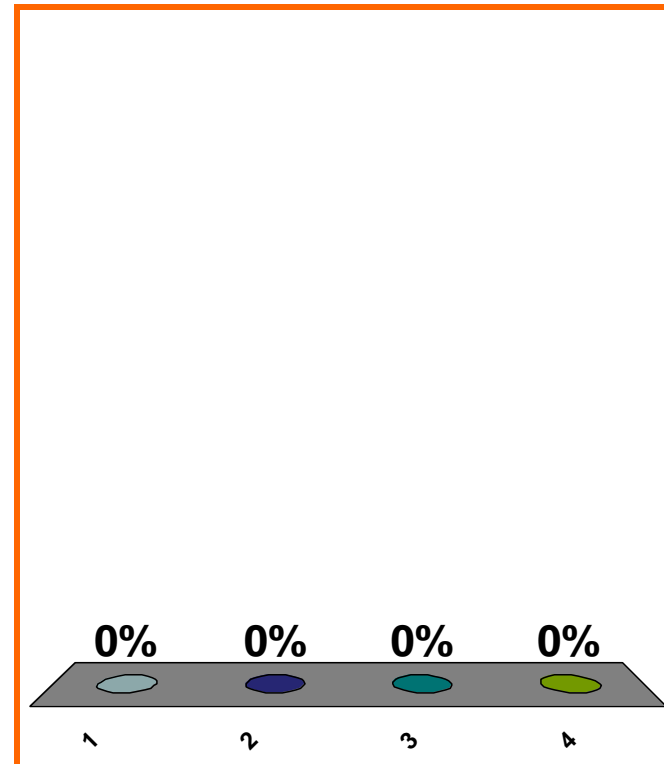
$$3x^3 + 2x \underset{x \rightarrow 0}{\sim} ??$$

(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

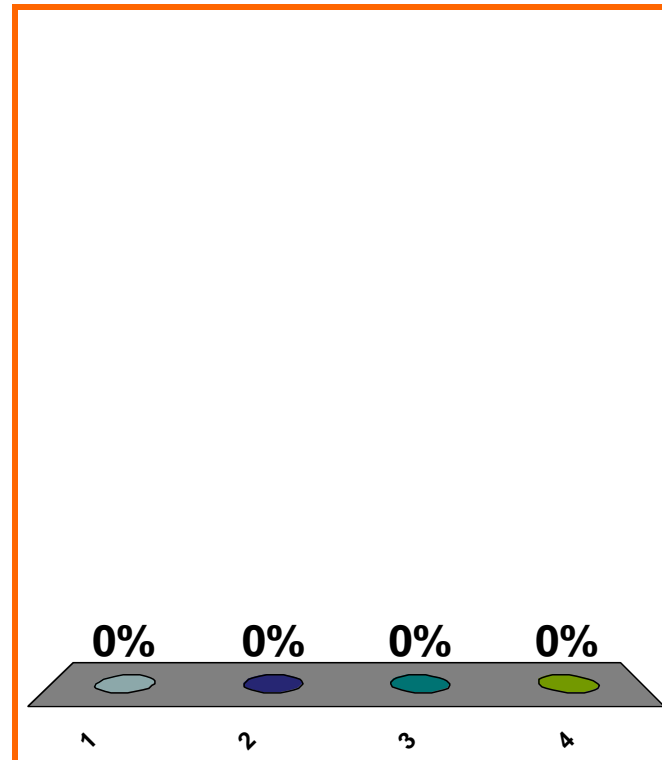
$$4x^5 - 3x^3 + 8x^2 \quad x \rightarrow 0 \quad ??$$

(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

0 of 5

Topic 0200

0 pts

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

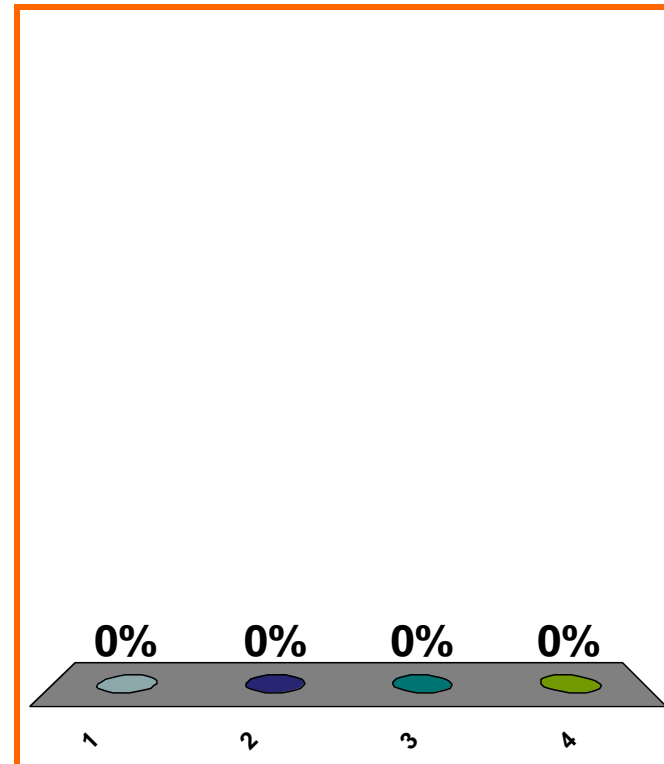
(a) $6x^5$

(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

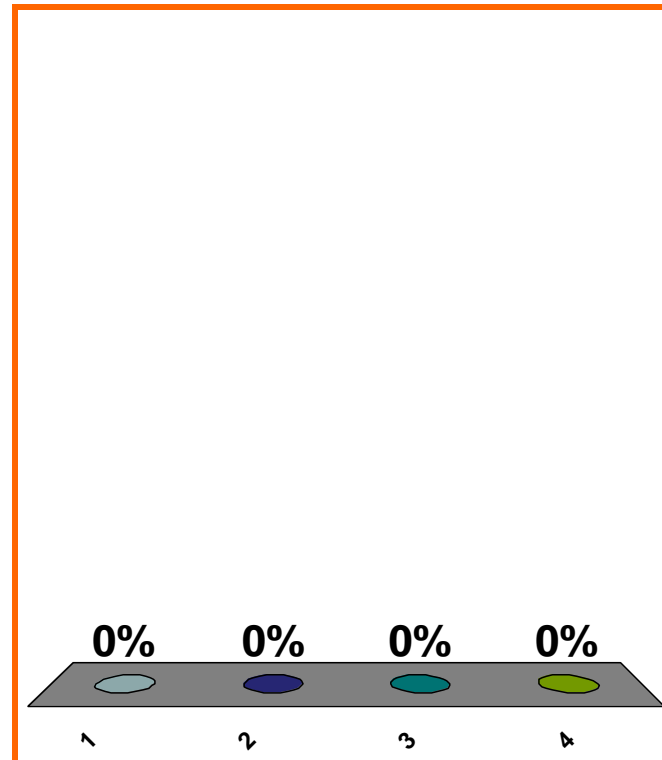
$$\lim_{x \rightarrow 0} \left[\frac{6x^5 + 7x^4 - 8x^3}{7x^5 - 2x^4 + 9x^3} \right] = ??$$

(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

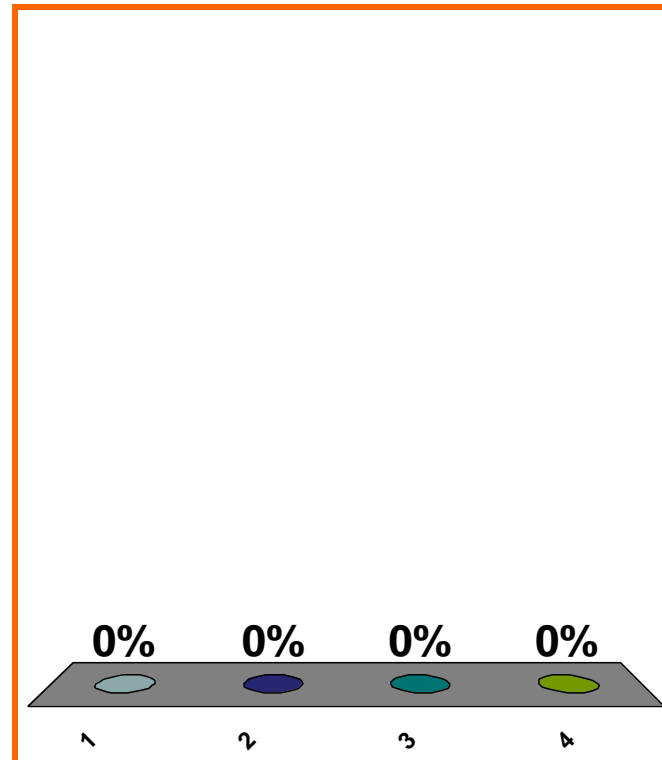
$$\lim_{x \rightarrow 0} \left[\frac{6x^8 + 7x^4 - 8x^3}{7x^5 - 2x^4 + 9x^3} \right] = ??$$

(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

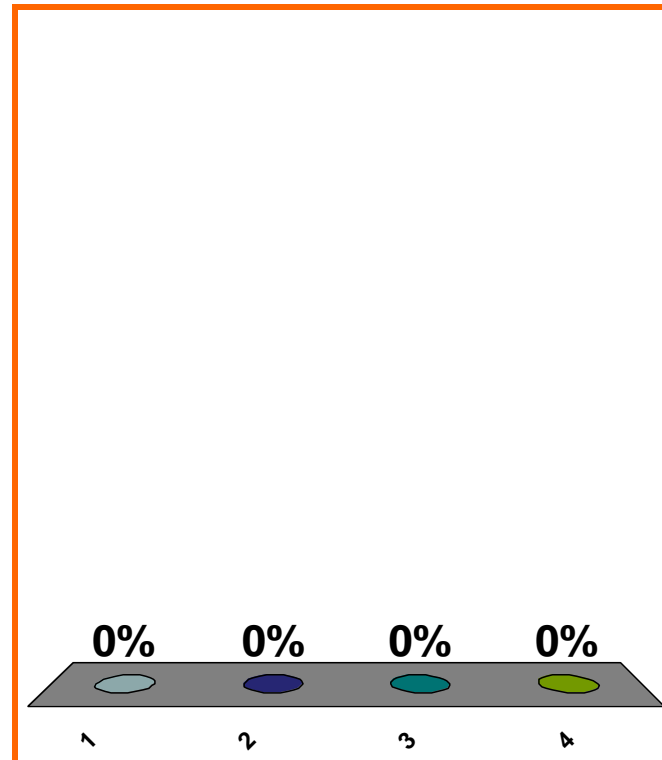
$$\lim_{x \rightarrow 0} \left[\frac{4x^6 - 7x^4 + 4x}{-2x^3 + 7x^2 - 4x} \right] = ??$$

(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

$$P(x) = (x - 3)^8(x^2 + x + 4)$$
$$Q(x) = (x - 3)^7(5x^9 + 9x - 7)$$

$$\lim_{x \rightarrow 3} \frac{P(x)}{Q(x)} = ??$$

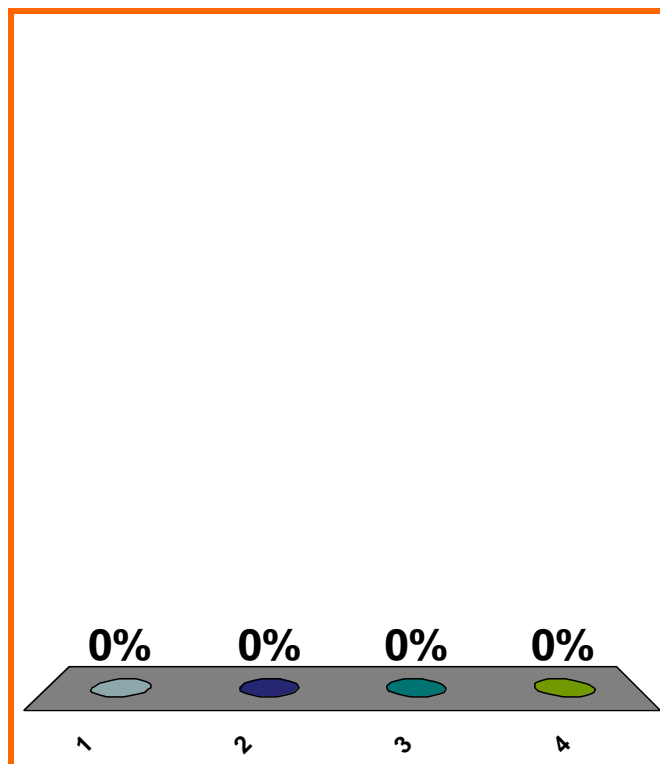
(a) 1

(b) ∞

(c) $-\infty$

(d) none of the above

Correct answer: 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	31	32	33	34	35	36	37	38	39	40

$$P(x) = (x - 3)^7(x^2 + x + 4)$$
$$Q(x) = (x - 3)^8(5x^9 + 9x - 7)$$

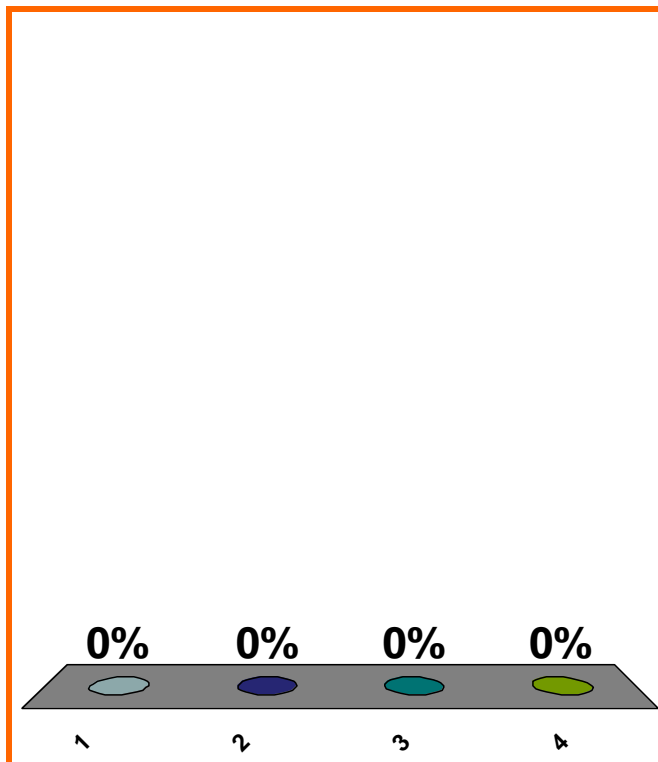
$$\lim_{x \rightarrow 3^+} \frac{P(x)}{Q(x)} = ??$$

(a) 0

(b) ∞

(c) $-\infty$

(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	31	32	33	34	35	36	37	38	39	40

$$P(x) = (x - 3)^7(x^2 + x + 4)$$

$$Q(x) = (x - 3)^8(5x^9 + 9x - 7)$$

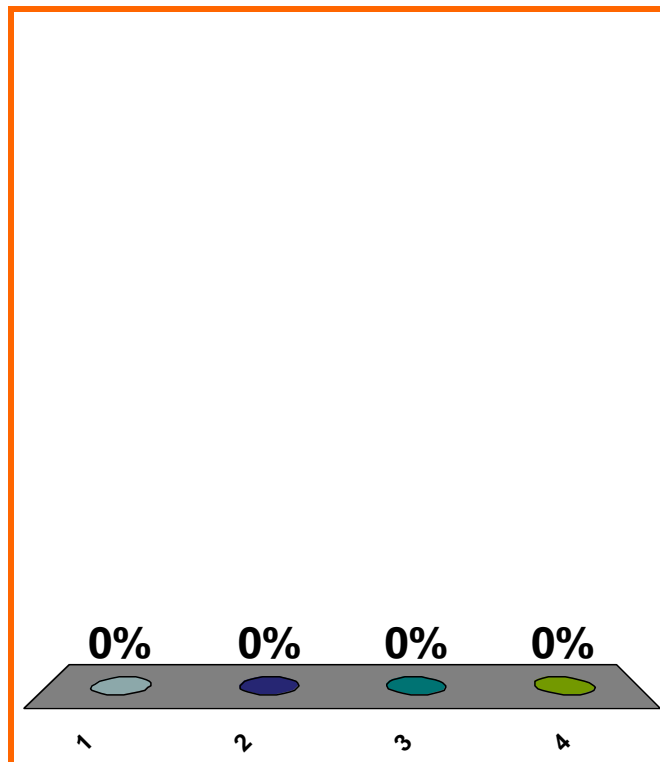
$$\lim_{x \rightarrow 3^-} \frac{P(x)}{Q(x)} = ??$$

(a) 0

(b) ∞

(c) $-\infty$

(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	31	32	33	34	35	36	37	38	39	40

$$P(x) = (x - 3)^5(-x^2 - x - 4)$$
$$Q(x) = (x - 3)^8(5x^9 + 9x - 7)$$

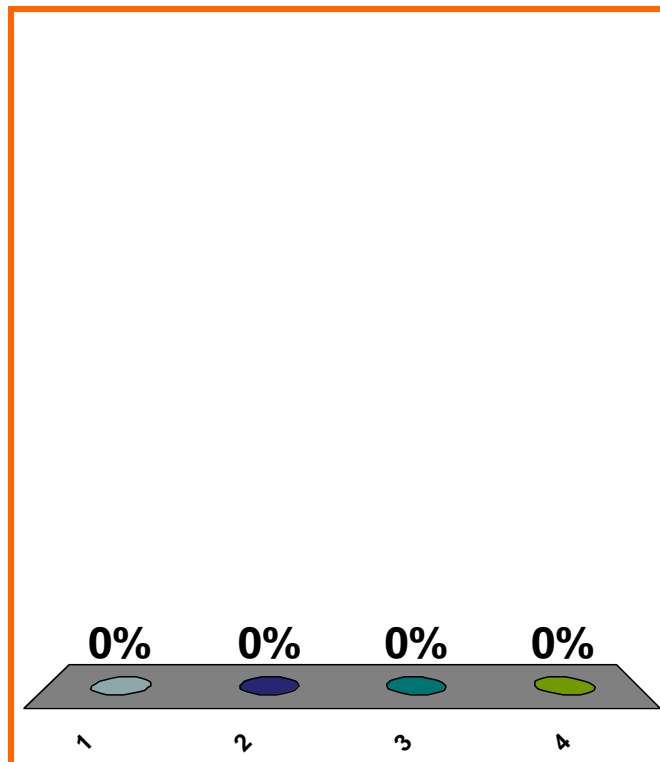
$$\lim_{x \rightarrow 3^+} \frac{P(x)}{Q(x)} = ??$$

(a) 0

(b) ∞

(c) $-\infty$

(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	31	32	33	34	35	36	37	38	39	40

0 of 5

Topic 0200

10 pts

17

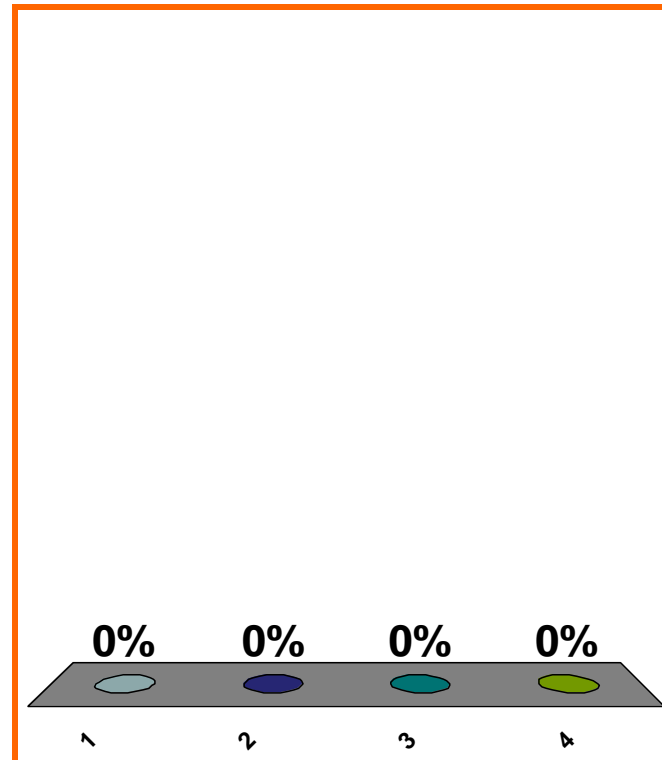
$$\sin x \underset{x \rightarrow 0}{\sim} ??$$

(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

18

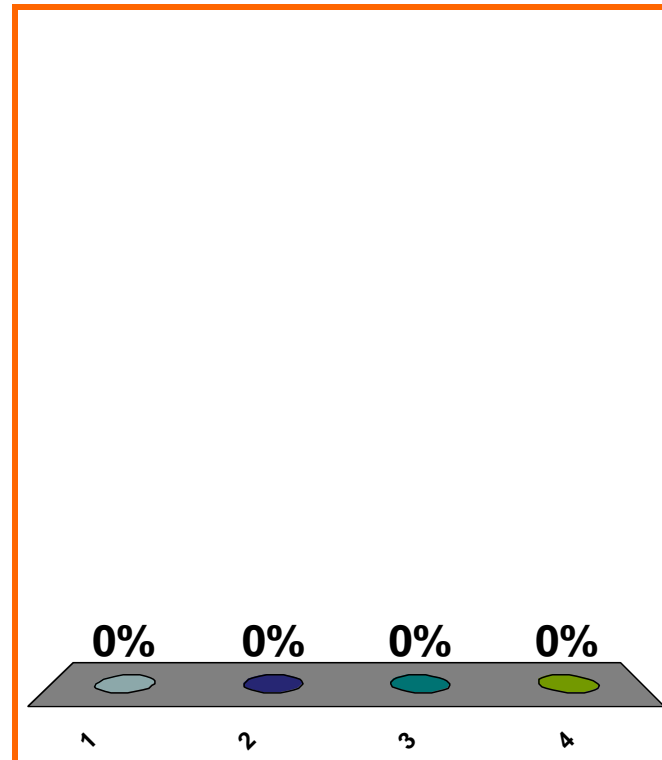
$$[\sin x] - x \quad x \sim 0 \quad ??$$

(a) $-x^3/6$

(b) 1

(c) 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

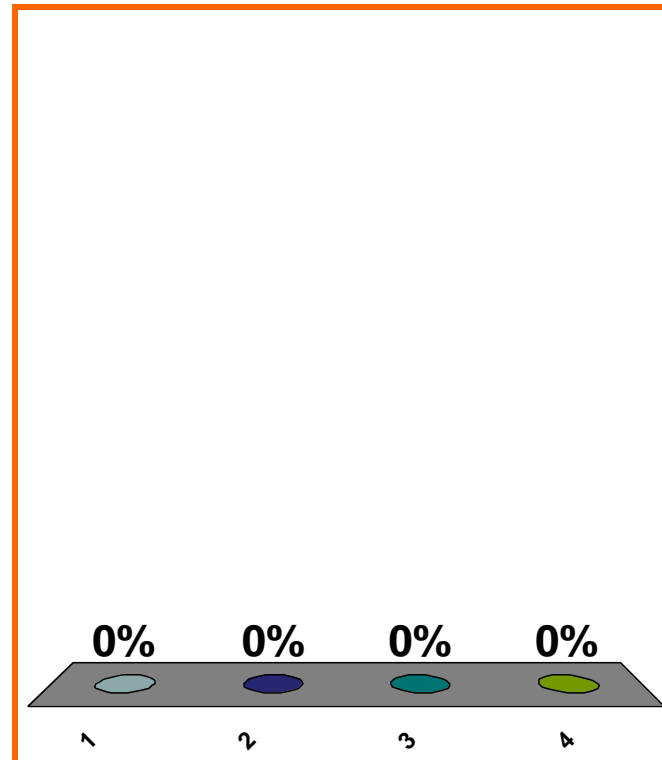
$\cos x \sim x \rightarrow 0$??

(a) $-x^3/6$

(b) 1

(c) 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

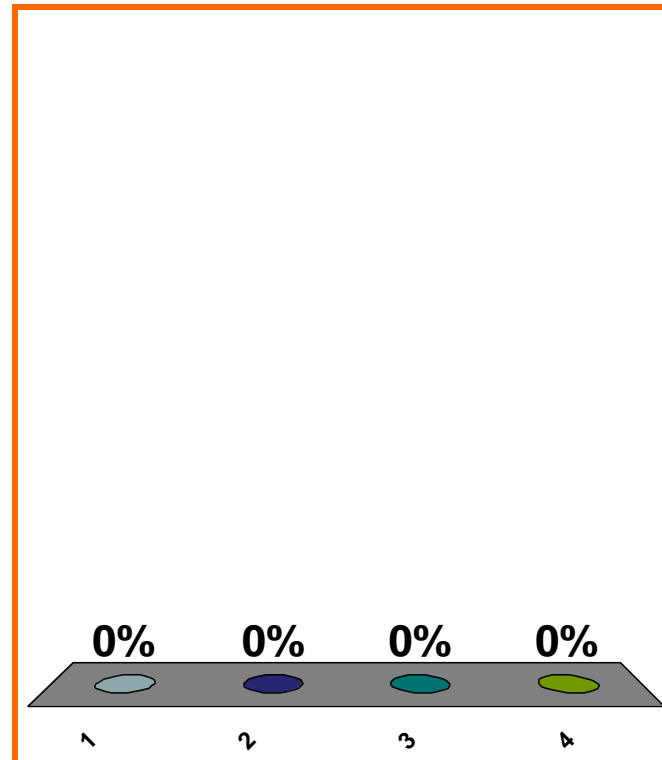
$$[\cos x] - 1 \quad x \sim 0 \quad ??$$

(a) $-x^2/2$

(b) 1

(c) 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

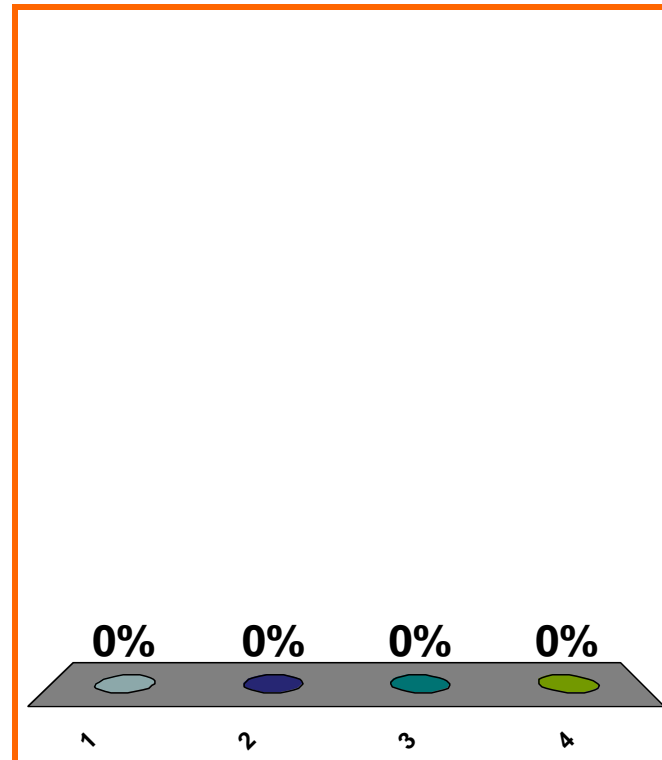
$$\lim_{x \rightarrow 0} \frac{3x^3 + 2x}{\sin x} = ??$$

(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 0230

10 pts

22

$$\lim_{t \rightarrow 0} \left[\frac{2t^5 + 8t^4}{t^2(\sin^2 t)} \right]$$

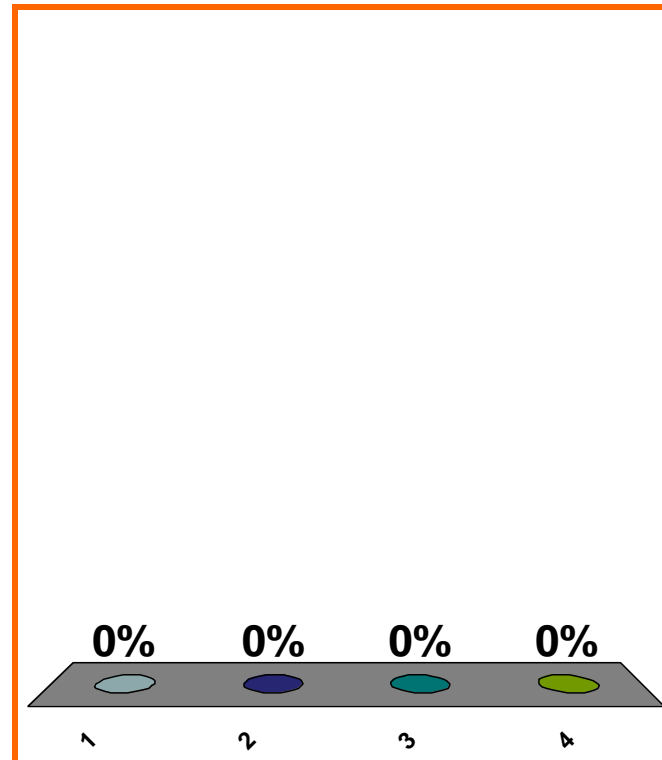
(a) 0

(b) ∞

(c) $-\infty$

(d) none of the above

Correct answer: 8



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

10 pts

23

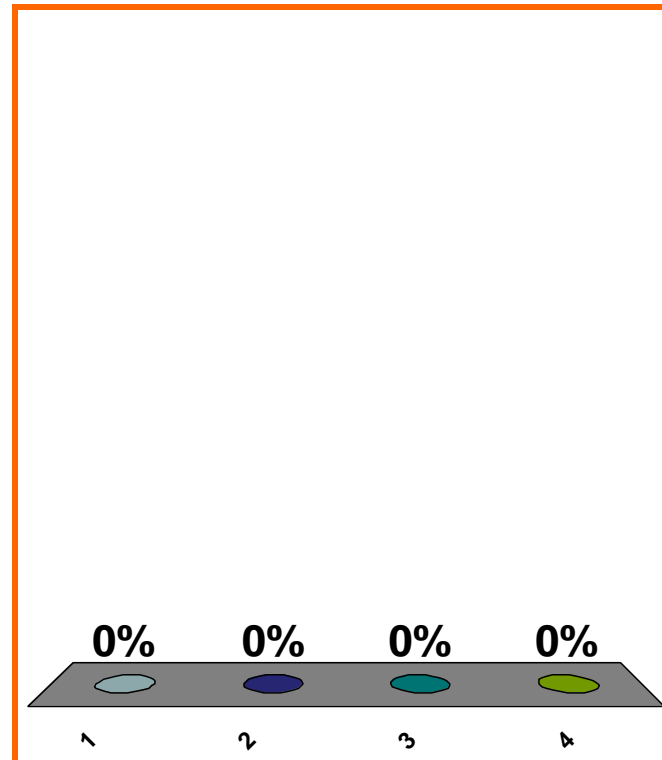
$$\lim_{t \rightarrow 0^+} \left[\frac{\sqrt{4t^6 + 9t^4}}{t(\sin t)} \right] = ??$$

(a) DNE

(b) ∞

(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

$$x - \sin x \underset{x \rightarrow 0}{\sim} x^3/6$$

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

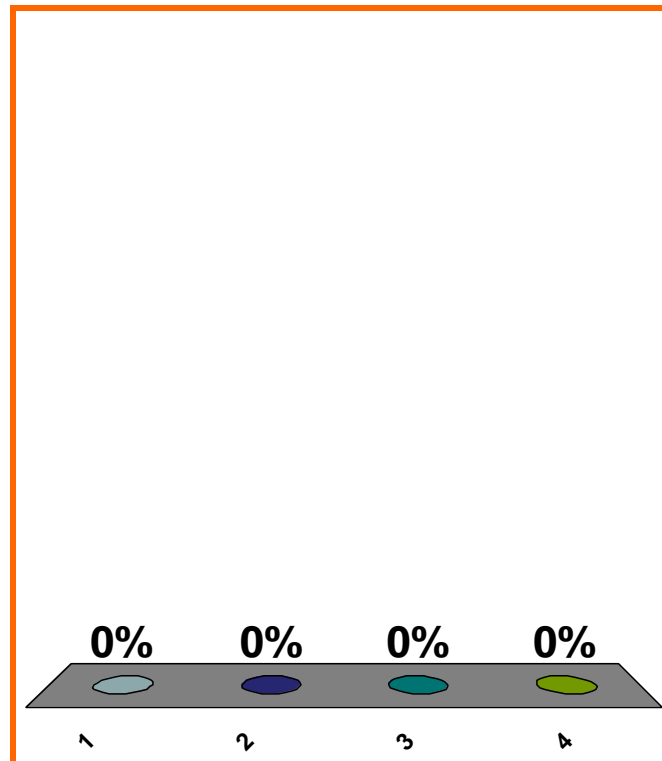
(a) DNE

(b) $-1/6$

(c) $1/6$

(d) none of the above

Correct answer: 6



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

10 pts

25

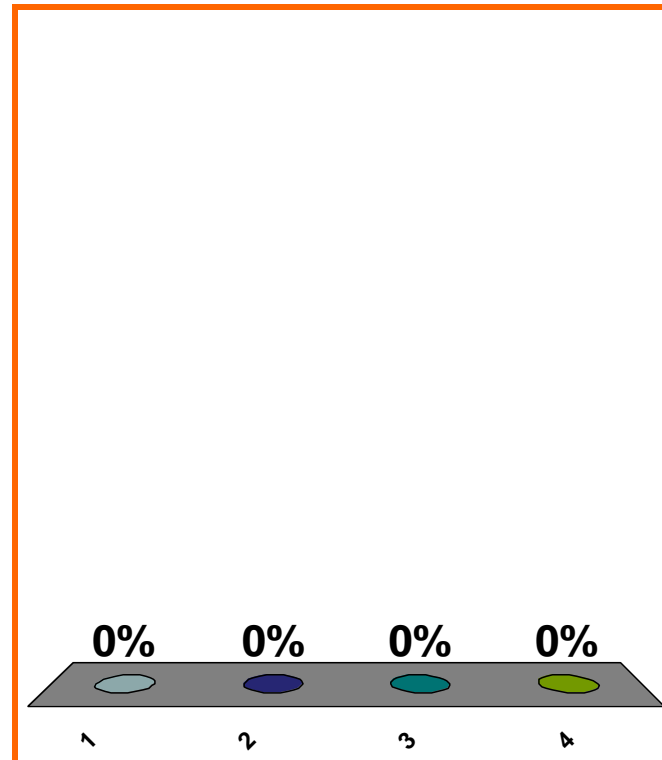
$$3x^3 + 2x \quad x \xrightarrow{\sim} \infty \quad ??$$

(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

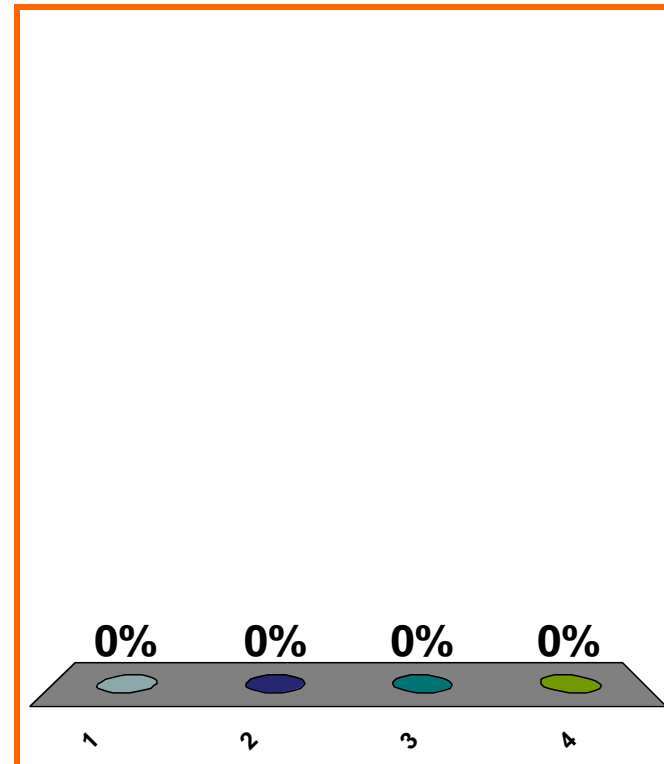
$$6x^5 + 7x^4 - 8x^3 \quad x \rightarrow 0 \quad ??$$

(a) $6x^5$

(b) $7x^4$

(c) $-8x^3$

(d) none of the above



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

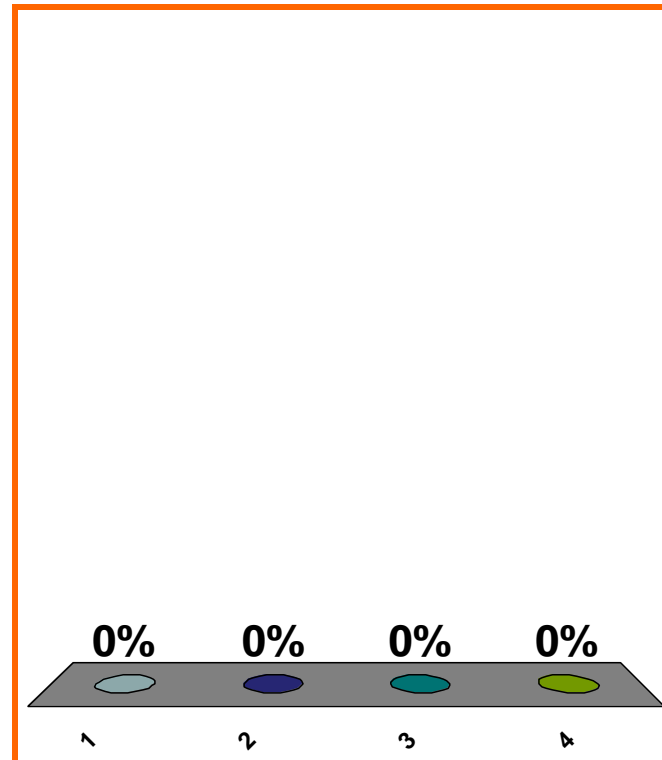
$$6x^5 + 7x^4 - 8x^3 \quad x \rightarrow \infty \quad ??$$

(a) $6x^5$

(b) $7x^4$

(c) $-8x^3$

(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

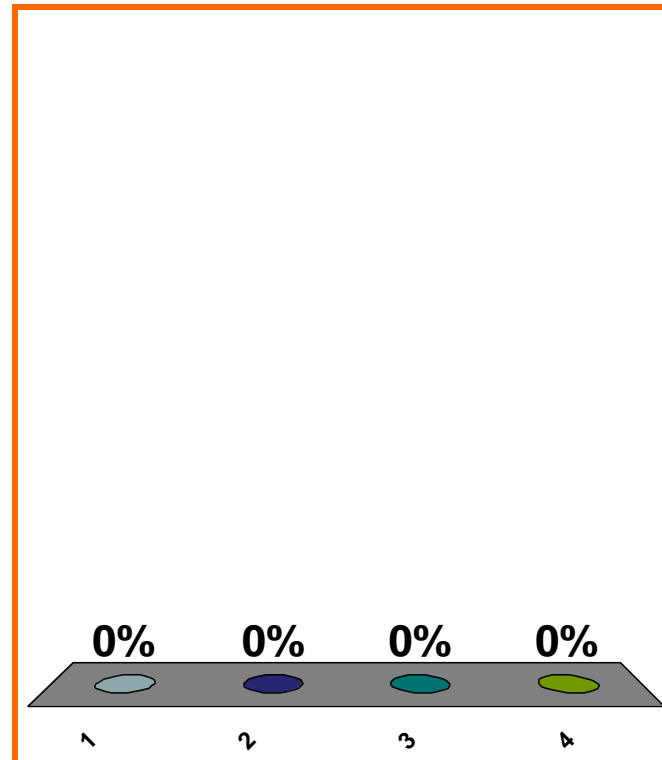
$$\lim_{x \rightarrow 0} \left[\frac{6x^5 + 7x^4 - 8x^3}{7x^5 - 2x^4 + 9x^3} \right] = ??$$

(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

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

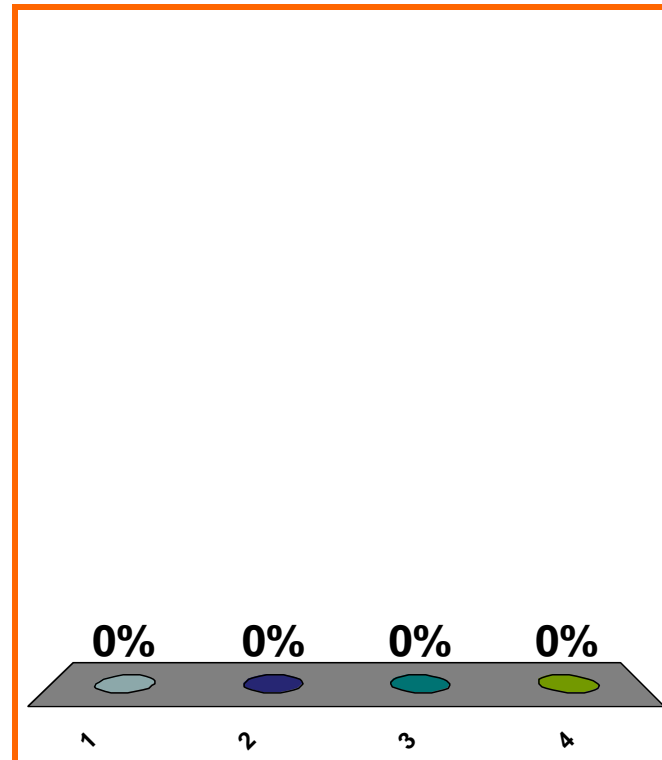
$x \rightarrow -\infty$

(a) 1

(b) x

(c) $-x$

(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

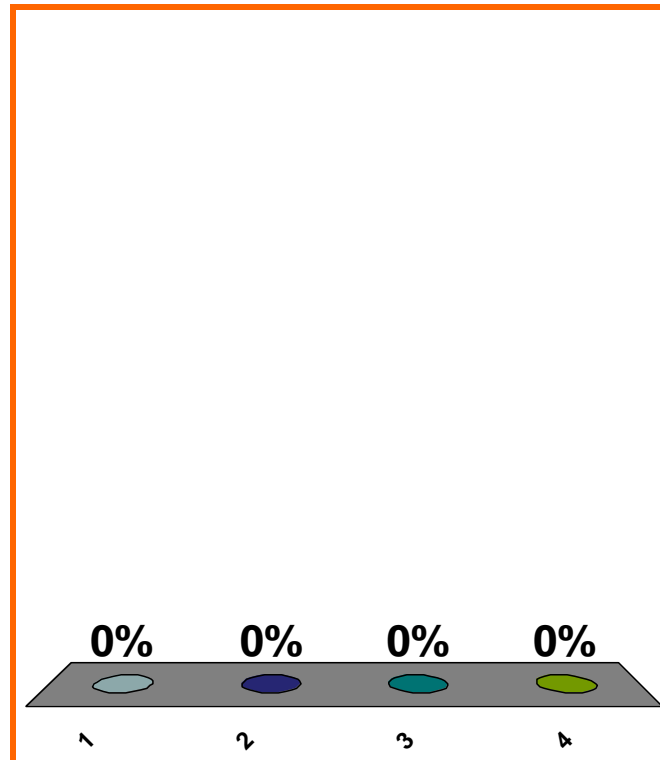
$$\lim_{x \rightarrow \infty} \left[\frac{\sqrt{x^2 + 1}}{3x} \right] = ??$$

(a) DNE

(b) 1/3

(c) -1/3

(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

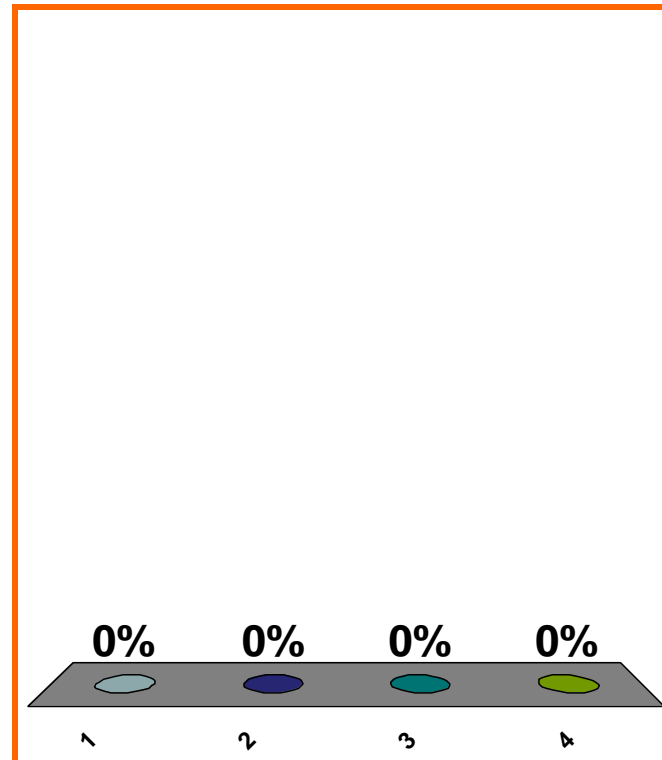
$$\lim_{x \rightarrow -\infty} \left[\frac{\sqrt{x^2 + 1}}{3x} \right] = ??$$

(a) DNE

(b) $1/3$

(c) $-1/3$

(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

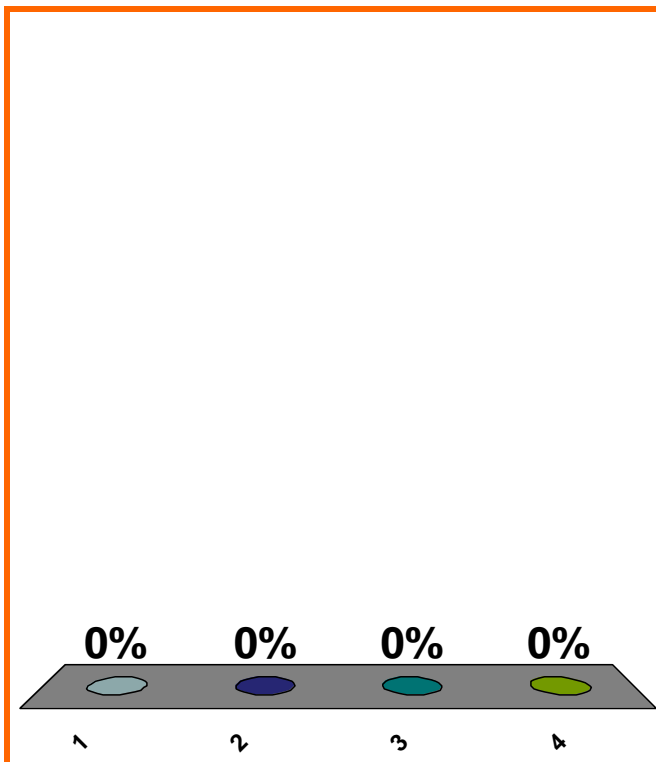
$$\lim_{x \rightarrow -\infty} \left[\frac{\sqrt{x^2 + 1}}{3x} \right] = ??$$

(a) $-1/3$

(b) $1/3$

(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

additivity of error

homogeneous vs. inhomogeneous

homog. linear polynomial in x, y, z

LOOK AHEAD

d/dt and d/ds

differentiation

differentiation w.r.t. x of expr. with y

log diff